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MODEL Airplane NEWS

JANUARY 2004

THE BEST-SELLING RC FLIGHT MAGAZINE

MODEL AIRPLANE NEWS 75th ANNIVERSARY 1929-2004

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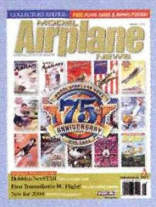
MODEL Airplane NEWS

JANUARY 2004, VOLUME 132, NUMBER 1

ON THE COVER: we celebrate 75 years of publishing with these past Model Airplane News *covers. Top row (left to right): July 1929, November 1929, December 1936, August 1942, June 1943; center row (left to right): March 1950, August 1959, August 1960, January 1954; bottom row (left to right): July 1961; July 1979; April 1986; July 1990; October 2003. ON THIS PAGE: in this issue, we present the world exclusive review of a ready-to-fly trainer that will revolutionize the way new pilots learn to fly: Hobbico's NexSTAR.*



FEATURES

FLIGHT TESTS

CONSTRUCTION

BONUS!
Pull-out plan & poster
page 115

COLUMNS

DEPARTMENTS

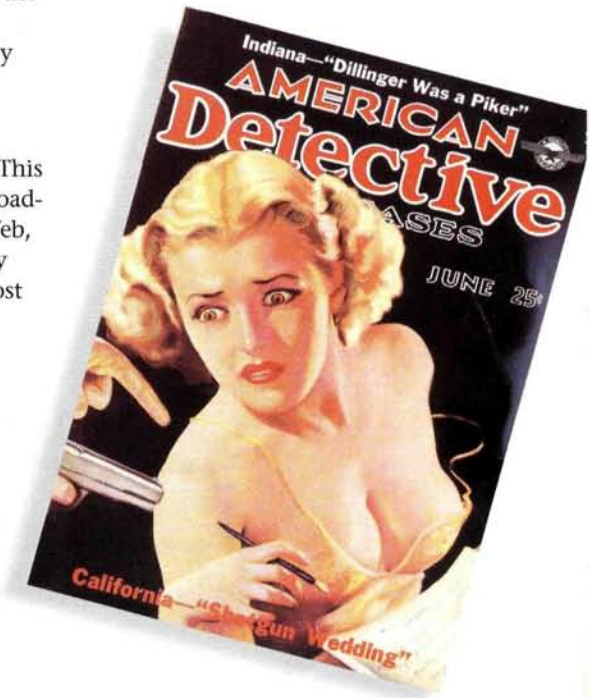
The First 75 Years

Dear Readers:

Model Airplane News was there right at the beginning. It was 1929, and gas-powered model engines weren't readily available when my grandfather, George C. Johnson, launched the magazine. He was an exceptional man—a cavalry officer, pilot, journalist and publishing visionary—and he wanted to be part of the bright future he saw for aero modeling. He had already produced some of the most widely read detective and romance magazines of the day, but he decided to embark on the production of what would be his lasting legacy and an American publishing icon.

The era during which *Model Airplane News* was introduced was one of inspired adventure. Higher, faster, farther—record-setting pilots with their radical new airplanes were the heroes for several generations of young people. And *Model Airplane News* was the information pipeline that helped bring so many youngsters into the new field of model flight.

The magazine continued to grow with the nation; it kept up with aviation and modeling trends through World War II, the Korean War, the jet and experimental developments of the '50s and on into the Space Age. In the '80s and '90s, we transformed *Model Airplane News* and Air Age into a topnotch, truly professional media company, and our magazine family grew with *RC Car Action, RC Nitro, Backyard Flyer, RC Boat Modeler, RC MicroFlight* and *Flight Journal*.



Today, in 2004, after 75 years, Air Age Media is healthy and thriving. This year, we'll publish more than 12,000 pages in 70 issues. And we've broadened the scope of our activities by expanding into multimedia, the Web, books, DVDs, innovative trade and consumer shows—and more. Only our mission hasn't changed: to give our readers the most exciting, most comprehensive and best-respected RC journalism in the industry.

But we couldn't have achieved any of this without your input and support. We will continue to honor that tradition as we salute you—our readers—on this milestone in publishing.

Sincerely yours,

Louis V. DeFrancesco Jr.
President and CEO
Air Age Media Inc.

Flying high at 75

As we started to browse through 75 years of *Model Airplane News* issues, we realized that while these valued magazines chronicle modeling history and development, they are also a piece of Americana and a window on our nation's culture and ideals. The commemorative article contained within the pages of this issue was literally months in the making: the magazine staff and contributors Bob Aberle, Dave Gierke and Nick Ziroli Sr. spent many long hours poring over back issues. Photographers Pete Hall and Deron Neblett captured more than 300 digital images; and associate managing editor Jaime Studd and art director James Jarnot transformed everyone's visions and prose into a 16-page article that I know will be cherished for years to come.

As you might imagine, contributors to *Model Airplane News* have produced some outstanding plane designs in the past 75 years, but would you believe that more than 700 of them are still available at our RC Store? This issue also features 350 all-time favorite plans in a bonus, photo-illustrated guide that starts on page 99. Backyard flyers—sport-scale flyers—giant-scale warbirds ... it's a sure bet that you'll find your ideal building project here.

RECORD-SETTING FLIGHT

If you were intrigued by the overview of Maynard Hill's nonstop RC transatlantic crossing in last month's "Final Approach," you won't want to miss our follow-up feature article on page 84. Associate editor Rick Bell interviewed Maynard to get the inside scoop on how he and his team accomplished this historic achievement.

WHAT'S IN STORE FOR 2004?

Check out our special, expanded 12-page "Air Scoop" on page 36 for a sneak peek at more than 60 new planes and gear that manufacturers will be offering for the upcoming flying season. Our favorite new products include giant-scale ARF aerobats, beautifully built sport flyers, a slew of new backyard flyers and more. Remember: you saw them here first!

WORLD EXCLUSIVE

If you're new to the hobby (or know someone who is!), you're in luck; with the new Hobbico NexSTAR ready-to-fly trainer, learning to fly has never been easier. Not only does the NexSTAR boast 15-minute assembly, but it also has an onboard stabilization system that virtually guarantees success. It also comes with a special version of Great Planes' outstanding flight sim *RealFlight*, so new pilots can practice their skills in the comfort of their own homes. We're excited—and honored—to debut this revolutionary plane in an exclusive review that starts on page 144. Be sure to check out the video "Click Trip" on our Web page: modelairplanenews.com.

ELECTRICS FEST

The NEAT Fair is the place to be for electrics enthusiasts from across the nation, and last September, nearly 300 pilots and more than a thousand spectators gathered in Pleasant Valley, NY, to fly planes, share information and check out the latest developments in electric RC. This year's NEAT-fest offered an indoor fly-in as a micro-electrics event, nighttime flying and seminars by experts in the field. Don't miss West Coast associate editor John Reid's coverage on page 126.

Safe landings!

MODEL Airplane NEWS
FOUNDED 1929

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WRITE TO US! We welcome your comments and suggestions. Letters should be addressed to "Airwaves," *Model Airplane News*, 100 East Ridge, Ridgefield, CT 06877-4606 USA; email man@airage.com. Letters may be edited for clarity and brevity. We regret that, owing to the tremendous numbers of letters we receive, we cannot respond to every one.

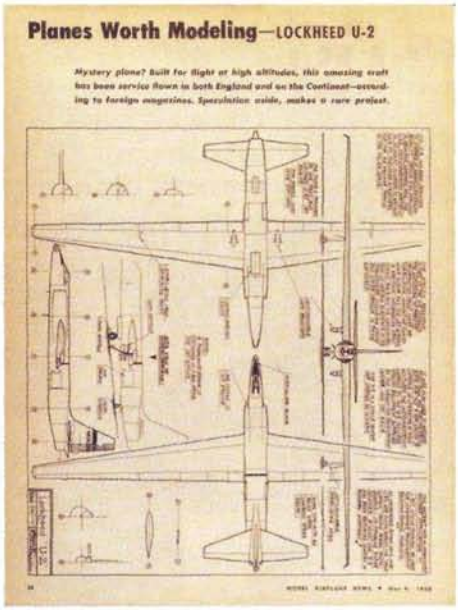
HERE'S TO ANOTHER 75

Seventy-five years? Wow! Lindy was still shining then! Before *Model Airplane News*, we modelers had to do it on our own. With this magazine, we finally had communication among us and news of others. Etched in my memory is purchasing that first issue at the local newsstand with 15 cents of my weekly 25-cent allowance and then reading it over and over, cover to cover! Paramount to developing our modeling abilities was the arrival of Charlie Grant, who did so much to bring *Model Airplane News* onward. Charlie had the answers to an embryo modeler's questions and, best of all, he taught you with his cherished column. Of course, there have been other great things in the magazine in the past 75 years, but the icing on the cake was how *Model Airplane News* promoted model aviation and, in turn, us modelers! I could say "See you in another 75," as *Model Airplane News* should still be going strong. Perhaps my ghost could write another congratulatory note; I would like that!

Hal deBolt
Sun City, FL

COLD-WAR SECRETS

There isn't any doubt what my favorite *Model Airplane News* issue is: March 1958. It had the 3-view of the U-2 spy plane, which was classified by the military at that time. I immediately rounded up enough balsa to build a model of it (of course, I didn't know about the classification issue). The airplane's existence was not announced to the public until Gary Francis Powers was shot down in Soviet air space. I still have that issue and cherish it highly. I understand that at the time, our Department of Defense actually considered recalling the issue but then decided that taking no action would call less attention to the plane's existence.


Planes Worth Modeling—LOCKHEED U-2

Mystery plane? Built for flight at high altitudes, this amazing craft has been service flown in both England and on the Continent—according to foreign magazines. Speculation aside, makes a rare project.

Jerry Short
Blanchard, OK

OLD-TIME ENGINES

You wanted memories of *Model Airplane News*; here are my favorites. Barney Snider (who owned Modelcraft) tells that during the War, the GHQ was about the only engine you could buy. They ran full-page ads in *Model Airplane News;* I think an assembled engine was $9.65, and parts that you assembled yourself were $6.95. The magazine started getting letters saying the engine would not run, so Charles Hampson Grant and a few others went down to the Modelcraft store in New York. Barney said, "Come with me," and took them into a back room where the shelves on the back wall were piled high with hundreds of engines in boxes. He said, "Pick one. Any one." They pointed at one of the boxes. He took the engine out, mounted it, fueled it, hooked up the battery, gave a mighty pull on the string, and the thing just

purred away. He asked, "What do you mean, it won't run?"

I can't remember who told me this one, but a kid bought an engine made in Brooklyn, and it wouldn't run. He took the streetcar to the place of business and walked in the door with the engine in hand. The guy behind the counter looked at him and asked, "What's the matter, kid? Engine won't run?" He took the engine and threw it against the back wall, where it dropped onto the floor with a pile of other engines. The guy handed him another engine and said, "See if this one will run." The kid took it home, and it ran perfectly. [email]

Bill Simpson

RECEIVER FIRST

The "Radio Control News" column by Edward J. Lorenz in the March 1959 issue presented a schematic and PC-board layout for the Kraft receiver. The writer commented, "Test receivers built from this reader schematic show brilliant results." From this column, an industry was launched, and Kraft Systems dominated digital proportional radio control for many years.

I built this "original" receiver and was so pleased with its performance that I built three more. In my opinion, the Kraft single-channel tone receiver was a major contribution to successful flying in the early days of RC. I still have the March 1959 issue because the Kraft receiver marked a turning point in RC reliability.

Best regards from a model airplane builder and flier since 1938.

William J. Smith
Hazleton, PA

ONE COOL CAT

As a Brit, I spent my earliest years unaware of *Model Airplane News*, but when my father, a Royal Air Force officer, was stationed in Belgium in the 1970s, I soon discovered it in the base's bookstore. I bought my first issue in March 1974, just about 30 years ago when I was 13 years old.

I still have that first issue, and looking at it now makes me realize how much information you simply soak up at that age: I seem to know whole pages almost by heart. One highlight is that unforgettable outside back-cover advert for SuperTigre engines featuring a studio shot of that impossibly suave-looking gentleman, Terry Prather. It seemed to offer the promise: "If you build model airplanes, then one day, you, too, could be as cool as this."

Michael Oakey
London, England

SCHOOLBOY PASTIME

Just a note to congratulate you on your 75th anniversary. I have been a longtime subscriber and enjoy every issue. Many years ago, as a schoolboy in Jackson, MS, my class spent a weekly period at the school library reading and reviewing materials. Some of my friends thought it was boring, but I knew better because I headed straight to the periodicals rack and grabbed the latest issue of *Model Airplane News*. With the inspiration from those articles and pictures and the encouragement of my brother Allen, I became a lifelong modeler. Best regards for the next 75 years.

Ken Johnson
Harrisburg, NC

We are deeply grateful to all who wrote in with their favorite Model Airplane News *memories. We hope that this commemorative issue will remind you of the first time you picked up our magazine and of your favorite articles and features of yesteryear. Please continue to email your remembrances as we celebrate our 75th year of publication (man@airage.com or 100 East Ridge, Ridgefield, CT 06877-4606 USA).* DC

TIPS & TRICKS

Illustrations by Richard Thompson

SEND IN YOUR IDEAS. *Model Airplane News* will give a free, one-year subscription (or a one-year renewal, if you already subscribe) for each idea used in "Tips & Tricks." Send a rough sketch to *Model Airplane News*, 100 East Ridge, Ridgefield, CT 06877-4606 USA. BE SURE THAT YOUR NAME AND ADDRESS ARE CLEARLY PRINTED ON EACH SKETCH, PHOTO AND NOTE YOU SUBMIT. Because of the number of ideas we receive, we can neither acknowledge each one nor return unused material.

TIC TAC TOOL BIN

Small parts can be infuriatingly easy to misplace when you're assembling or servicing a model. Dan MacLeod sent in this idea for keeping track of all those little screws, nuts, clips, pins, etc. He had a couple of spare Tic Tac containers, so he taped them together back to front and started his own mini-parts bin. Each time he empties another container, he adds it to the bin. This is a great way to keep separate compartments for a variety of small parts, and as a bonus, your breath stays fresh, too!

Daniel MacLeod, New Glasgow, Nova Scotia, Canada

HEX-HEAD HANDLES

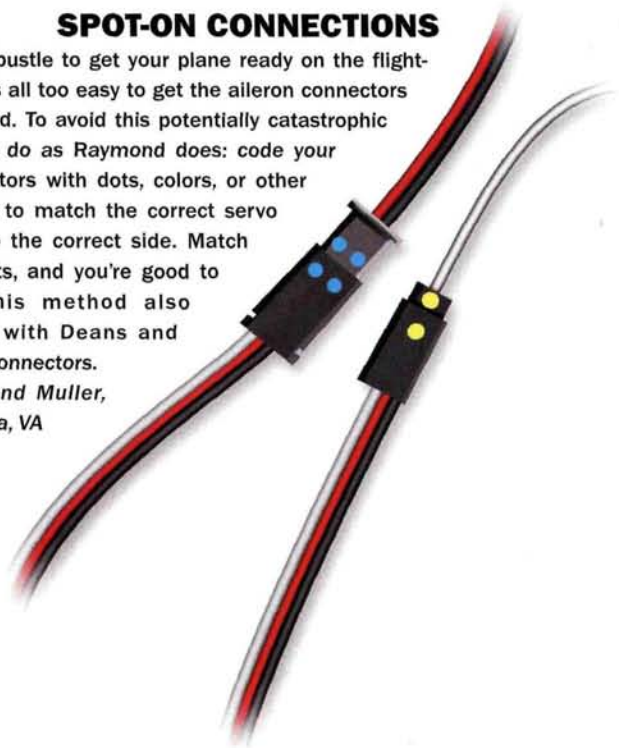
We're all familiar with the "L-shaped" hex-head and hex-ball wrenches and how useful they are, but sometimes, those little tools don't provide enough torque. Here's an easy fix. Drill a hole that's slightly smaller than your wrench into the end of a hardwood dowel. Drill a second hole through the side of the dowel to meet the first. Then, use a scroll saw to turn your holes into a slot that flexes to allow the wrench to be inserted. Drill one last hole perpendicular to the slot and insert a cinch bolt. Now you have a handle that can be tightened around your wrench!

Karl Byman, Longview, WA

SPOT-ON CONNECTIONS

In the bustle to get your plane ready on the flightline, it's all too easy to get the aileron connectors reversed. To avoid this potentially catastrophic slip-up, do as Raymond does: code your connectors with dots, colors, or other means to match the correct servo lead to the correct side. Match the dots, and you're good to go! This method also works with Deans and other connectors.

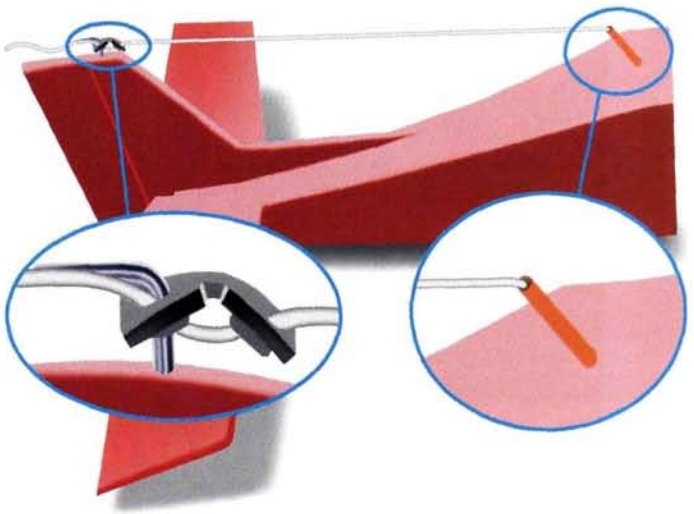
Raymond Muller, Palmyra, VA



ANTENNA EXIT

A piece of control-rod tubing provides great protection for your antenna at its exit point from the fuselage. The tube allows the antenna to pass freely and provides some flex during a crash. For added protection, secure the wire with an L-hook (available at any hardware store) through a small hole that you drill into the tail. Then, insert it through one of the double-holed, rubber, vibration-reduction grommets that are included with Futaba servos. In a crash, the grommet will flex and allow the antenna to slip, thereby preventing serious damage.

Ed Pomnitz, Parma, OH



SEND IN YOUR SNAPSHOTS. *Model Airplane News* is your magazine and, as always, we encourage reader participation. In "Pilot Projects," we feature pictures from you—our readers. Both color slides and color prints are acceptable, but please do not send digital printouts or Polaroid prints. We receive so many photographs that we are unable to return them. All photos used in this section will be eligible for a grand prize of $500, to be awarded at the end of the year. The winner will be chosen from all entries published, so get a photo or two, plus a brief description, and send them in! Send those pictures to "Pilot Projects," *Model Airplane News*, 100 East Ridge, Ridgefield, CT 06877-4606 USA.

2003 EDITORS' PICKS

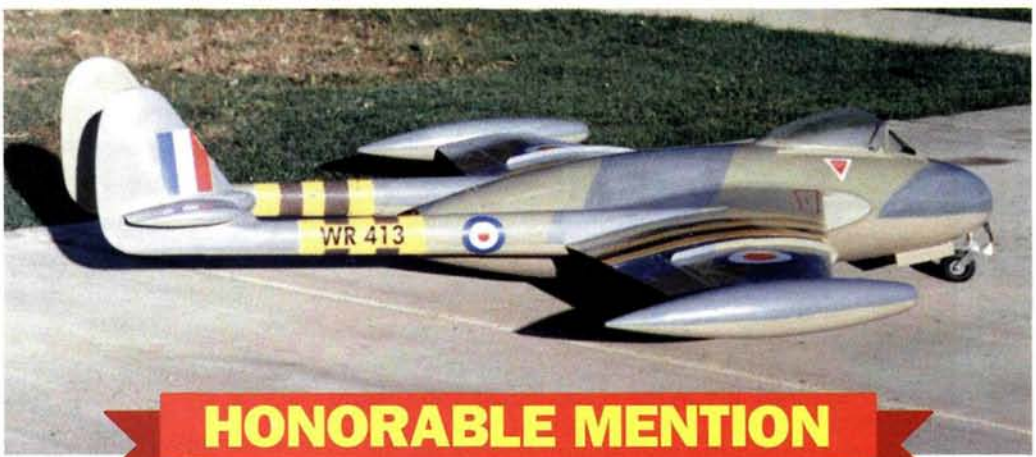
GRAND-PRIZE WINNER

GRUMMAN GOOSE
Henry Simon, Bobcaygeon, Ontario, Canada

Henry's 65-inch-span amphibian turns out to be a real golden-egg producer; it has earned him the $500 grand prize in our 2003 "Pilot Projects" contest! The 7.2-pound Grumman Goose uses balsa-and-ply construction with a fiberglass and epoxy-resin covering. Henry drew up the plans for it after studying 3-views and photos obtained from Bob Banka's Scale Documentation. Powered by a Model Motors electric motor on two, 8-cell, 1700mAh batteries wired in parallel, this great-looking Goose is worth a gander any day. Congratulations, Henry! Your $500, a one-year subscription and a *Model Airplane News* T-shirt are on their way to you.

DH112 VENOM
George Wardleigh, Ogden, UT

This unique twin-tail warbird caught our eye back in July, when it first appeared in the "Pilot Projects" column, and we've tapped it for an honorable-mention curtain call. George scratch-built his 19-percent-scale de Havilland DH112 Venom from 3-views; it spans 96 inches and weighs 28 pounds. A RAM 750 provides thrust and an authentic jet whine. George's fine work has earned him a one-year subscription and a *Model Airplane News* T-shirt. Way to go!



HONORABLE MENTION

This month, we highlight three modelers who are also longtime *Model Aiplane News* readers. We've quoted from their letters a bit more extensively than usual, but we found their comments worth sharing; we hope you agree.

FLY BABY BIPE
Ernest D. "Don" Harbin, Flushing, MI

Seventy-plus years of modeling ... now that's what we call dedication to the hobby! Don Harbin writes, "I have *Model Airplane News* [issues] that go back to the '30s, so you can see that I have been a longtime reader—except for the years of WW II, when I was overseas." He's pictured here with his 1/3-scale Fly Baby bipe, scratch-built from Balsa USA plans. Don covered it with Sig Koverall, two coats of nitrate dope and one of butyrate, and he finished it off with latex paint. The 87-inch-wingspan Fly Baby weighs 23 pounds and is powered by a Zenoah G-62 engine turning a Zinger 6x10 prop. Beautiful job, Don; thanks for sharing.

P51B MUSTANG

Chaisak Saeng-Xuto, Bangkok, Thailand

Chaisak and his friend Sittisak built this beautiful P51B Mustang from a Top Flite P51D kit, incorporating the P51B conversion kit (sold separately). The spinner, display propeller and in-cowl muffler are also from Top Flite. The building buddies silked the plane and finished it with automotive paint, then coated it with polyurethane. A close look at their masterpiece reveals panel lines, screw heads and rivets ("... about 1,500 of them when we stopped counting!" says Chaisak). The first powerplant they installed overheated because of the small cowl opening and the in-cowl muffler, so they replaced it with a 12-year-old O.S. 61SX engine, and the plane flies superbly with it. They also used Robart retracts and tires, which, according to Chaisak, have contributed to the Mustang's flawless performance. He adds that his fellow fliers at the Don Muang R/C Club "... express their disbelief that this plane is from a 'common' Top Flite kit. Some people believe that cheap is not good and good is not cheap, but I have always found that cheap can be made good also."

He continues, "I have enjoyed *Model Airplane News* since I was a boy (I am 60 now). That you have been able to put out this excellent model magazine for such a long time is quite an achievement to be proud of, and I salute your team for the effort. Your recent articles by Quique Somenzini are very good and prompted an old-timer like me to resume and rediscover the excitement of aerobatics again. Thanks!"

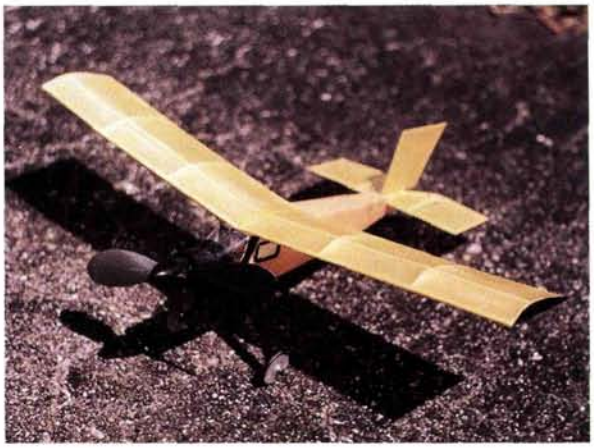
EAGLET

Jack Dundas, Ridgeville, Ontario, Canada

Former Royal Canadian Air Force pilot Jack Dundas writes: "During the summer of 1930, my mother brought home my first copy of *Model Airplane News*. She had seen it on the newsstand and thought that I would be interested.

"That was the understated idea of the year! I read it from cover to cover immediately, and it proved to be the first of many."

Jack fell in love with a model called the "Eaglet" that he saw advertised in the January 1931 issue, but he never managed to get his hands on it. The years passed, and Jack served his country during WW II in the 424th Squadron of the RCAF, flying Halifax B3s and serving a tour of 35 "ops" including D-day. In 1993, the Yorkshire Air Museum honored Jack by sending a 1/6-scale RC model of Jack's full-size, wartime QB-B "Bambi" colors to perform at the Hamilton, Ontario, airshow.



But what of his long-lost love, the Eaglet? Jack's cousin David—a member of the Society of Antique Modelers—was able to track down the model and even find plans for it! Says Jack, "There was nothing to do except fulfill my boyhood dream and build one, at last. A trip to my model scrap pile and about a week's work resulted in my own Eaglet—after 70-odd years!"

He concludes, "As I tell my friends: be like Peter Pan and never grow up! Save the worrying for when you grow old (I'm 82)."

AIR SCOOP

by the Model Airplane News *crew*

NEW PRODUCTS hit the model airplane market all the time, so here's the inside source for what's hot and where you can get it. Every issue, we sift through product announcements, show reports, rumors and prototypes to let you in on the best and the latest. Remember, you saw it here first!

WHAT'S NEW *for* 2004

What's in store for RC in 2004? If these new releases are any indication, the sky's the limit! Here, we've chosen more than 60 planes, engines and gear that we're excited about, and we've expanded "Air Scoop" to a record 12 pages to bring you the hottest products for the New Year. So go explore what's new for 2004!

HANGAR 9
F4U Corsair

This .60-size ARF has scale features galore, not the least of which are its 90-degree, rotating retracts! The 65.25-inch-span plane also offers all-built-up construction, UltraCote covering, all needed hardware and a painted fiberglass cowl. A 5-channel radio with six servos is required. Cost will be just $264.99.

Hangar 9; distributed by Horizon Hobby Inc. (217) 355-9511; horizonhobby.com.

GREAT PLANES MODEL MFG.
Christen Eagle II

This beauty will steal the show at any flying field with its distinctive scale scheme and aerobatic performance. The 68.5-inch-top-wingspan plane features wooden construction, MonoKote covering and Great Planes hardware. A 1.6 to 2.2 2-stroke or 1.8 to 3.0 4-stroke is recommended, and a 4-channel radio with eight to nine servos is required.

Great Planes Model Mfg.; distributed by Great Planes Model Distributors (217) 398-6300; (800) 682-8948; greatplanes.com.

GREAT PLANES MODEL MFG.
RV-4

This unique park flyer kit features all-wood construction, full-span, strip ailerons and plenty of aerobatic capability. The model has a 41.8-inch wingspan, so it's ideal for quiet flying at a park or ball field. You'll need to provide a geared motor and a 4-channel radio with three microservos.

Great Planes Model Mfg.; distributed by Great Planes Model Distributors (217) 398-6300; (800) 682-8948; greatplanes.com.

MAGNUM
XL-70RFS

What do you get when you combine the compact size of a .60-size engine with the horsepower of an .80-size powerplant? A .70 4-stroke from the Magnum XL Series! Like all Magnum XL 4-strokes, the XL-70RFS features CNC machining and ringed alloy pistons and is a great value. Specs: bore—25.8mm; stroke—22mm; displacement—11.5cc (0.702ci); weight—606g (21.4 oz.). This engine will retail for $179.99.

Magnum; distributed by Global Hobby Distributors (714) 963-0329; globalhobby.com.

MULTIPLEX

Easy Star

Looking for the perfect first plane? This all-foam flyer is extremely durable and can be flight-ready in just two hours! It was designed especially for first-time pilots, so it has easy, stable flight characteristics and nice gliding capability. The 54-inch-span plane comes with a Permax Speed 400 motor, a propeller, all the necessary parts, decals and a detailed instruction manual. You'll need to add a 3-channel radio, two microservos, an ESC and a 6- or 7-cell battery pack. The Easy Star retails for only $65.99; a ready-to-fly version with Hitec Focus 3 radio is $185.

Multiplex; distributed by Hitec RCD (858) 748-6948; multiplexusa.com.

SHOWSTOPPER!

HANGAR 9

33% Extra

A Mike McConville design, the latest giant-scale aerobatic ARF from Hangar 9 is an outstanding, precision 3D performer. It boasts a 97-inch-span wing, weighs 23 to 25.5 pounds and can be powered by a 62 to 80cc gas engine. The built-up plane is covered with UltraCote and features a two-piece wing for easy transportation. It will retail for $850.

Hangar 9; distributed by Horizon Hobby Inc. (217) 355-9511, horizonhobby.com.

KAVAN

FUN DOG

Made of one piece of light, dense, injection-molded foam, this ARF flyer comes out of the box completely assembled; you just need to install the power system of your choice and the elevator and aileron servos. The 36.25-inch-span plane has 331 square inches of wing area and weighs 45.75 ounces. An EPP foam version is called "Mad Dog."

Kavan; distributed by Sig Mfg. Co. Inc. (641) 623-5154; sigmfg.com.

THUNDER TIGER

RARE BEAR

Need speed? Check out this ARF! It features a painted fiberglass cowl and fuselage, built-up wing and tail surfaces covered with UltraCote, an aluminum spinner and a decal sheet. Its wing is also designed to accept retractable gear (not included). The 63-inch-span model is 55.5 inches long and weighs 8 to 9 pounds ready to fly. A .60 to a .90 2-stroke or .90 to 1.20 4-stroke is recommended; a 5-channel radio with five servos is required.

Thunder Tiger; distributed by Ace Hobby Distributors (949) 833-0003; acehobby.com.

WHAT'S NEW for 2004

HITEC RCD
CG-335 PRO

The all-new CG-335 Pro replaces Hitec's popular CG-335 by adding the NiMH peak-detection circuitry. Now modelers will be able to enjoy the power of this popular field charger without worrying about over-charging their valuable NiMH batteries. The DC-powered CG-335 can charge from 4 to 24, 270 to 3300mAh Ni-Cd or NiMH cells. It costs only $100.

Hitec RCD (858) 748-6948; hitecrcd.com.

GREAT PLANES MODEL MFG.
Wright Flyer

Would you believe this scale beauty can be flight-ready in just two hours? Its light plastic frame, foam wing, carbon-fiber struts and tailpieces just snap into place. The package includes two, 250-size geared motors, an ESC, a 7-cell, 300mAh NiMH pack and two propellers. You need add only a 3-channel radio and two microservos; then, just charge the battery and head to the field! The 31.4-inch-span Wright Flyer weighs 11.6 ounces and offers stable, responsive, easy-to-control flight, even at very low speeds. It will sell for just $89.99.

Great Planes Model Mfg.; distributed by Great Planes Model Distributors (800) 682-8948; (217) 398-6300; greatplanes.com.

GWS
New Park Flyers

GWS fans are sure to appreciate the company's latest offerings, which include a PT-17, a DC-3 and a ducted-fan-powered E-Starter. The hardest part will be deciding which one to build first! We have our eye on that gorgeous PT-17. All feature the same durable, light foam construction as the other GWS planes we've come to know and love. The planes will come painted as well as unpainted so you can add your own custom scheme. GWS planes come with specially designed GWS power systems; you need only add a transmitter, a battery pack, radio gear and an ESC.

GWS; distributed by Horizon Hobby Inc. (800) 338-4639; horizonhobby.com.

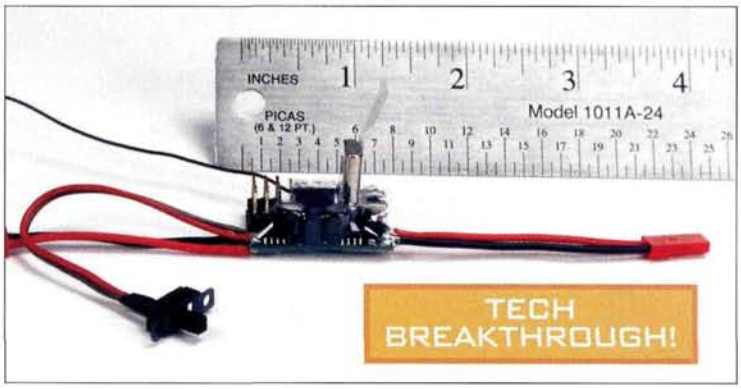
21ST CENTURY TOYS INC.

SHOWSTOPPER!

1/6-SCALE PILOT FIGURES

Add some personality to your plane with one of 21st Century's detailed action figures. The P-51 pilot and B-17 waist gunner shown here each come with authentic uniforms and scale details like weapons, parachutes, whistles, goggles, gloved hands, helmets and more. Just one look will tell you that these aren't run-of-the-mill figures; each 21st Century figure is unique and has a detailed facial expression. The P-51 pilot and B-17 waist gunner cost $24.99 each; check the 21st Century website for additional figures.

21st Century Toys (510) 481-6010; 21stcenturytoys.com.



CIRRUS

SUPER 4/10 MRX

Now get the convenience of a 4-channel micro-receiver and 10A proportional speed control in one small package. This new receiver weighs less than ½ ounce and features superior signal selection and a range of more than 1,500 feet! It also has auto shift select, so you can use it with any brand of FM or PPM transmitter. The built-in speed control can handle a 15A max current, it has a 4V cutoff and can handle 5 to 12 volts of current. The Super 4/10 MRX will sell for $64.99 (crystal not included).

Cirrus; distributed by Global Hobby Distributors
(714) 963-0329; globalhobby.com.

MULTIPLEX

Permax Brushless Motors & Li-poly Batteries

Want to improve the speed and performance of a Speed 400-powered plane? Add a brushless motor such as one fom the new BL-480 series from Permax. The first in a complete line of Permax brushless motors, these units are available with and without a gearbox. Want longer flights? Switch to one of the Li-poly packs offered by Multiplex. There are 18 different packs in this line, so you're sure to find the perfect one for your application.

Multiplex; distributed by Hitec RCD
(858) 748-6948; multiplexusa.com.

GREAT PLANES MODEL MFG.

GEE BEE ARF

With a one-piece, finished fiberglass fuselage, built-up and covered wings and painted wheel pants, cowl and rudder, this ARF racer is sure to be a winner. The 66-inch-span plane needs a .75 to .90 2-stroke or 1.20 4-stroke and a 4-channel radio with five servos.

Great Planes Model Mfg.; distributed by Great Planes Model Distributors
(217) 398-6300; (800) 682-8948; greatplanes.com.

GREAT PLANES MODEL MFG.

Extra 330S

This ¼-scale model of Gene Soucy's aerobat has a 74-inch wingspan and features a built-up construction with MonoKote covering. It also comes with an aluminum spinner, decals and horizon indicators. Add a 1.20 to 1.60 2-stroke or 1.20 to 1.80 4-stroke, and you're ready to bore holes in the sky! The Extra also needs a 6-channel radio with six servos.

Great Planes Model Mfg.; distributed by Great Planes Model Distributors (217) 398-6300; (800) 682-8948; greatplanes.com.

HANGAR 9

Ultra Stick Lite

Weighing in at 2.5 pounds less than the popular, original Ultra Stick, this new ARF model also has a redesigned rudder that adds enhanced aerobatic performance. This 75-inch-span model features built-up construction, transparent UltraCote covering and a quad-flap option for short-field performance and vertical approaches. The Ultra Stick Lite is designed for a 1.08 to 1.50 2-stroke, 1.00 to 1.80 4-stroke or G23 to G26 gas engine. It will retail for $249.99.

Hangar 9; distributed by Horizon Hobby Inc. (217) 355-9511; horizonhobby.com.

SEAGULL MODEL

Zero .40 ARF

Looking for a low-buck warbird that offers top-quality construction and UltraCote covering and trim? This Zero ARF has it all, plus all the necessary hardware and a painted fiberglass cowl. The 58.25-inch-span plane weighs 6 to 7 pounds and can be powered by a .40 to .48 2-stroke or a .50 to .72 4-stroke. A 4-channel radio with five servos is required. Cost? Just $159.99; now, that's a deal!

Seagull Model; distributed by Horizon Hobby Inc. (217) 355-9511, horizonhobby.com.

THUNDER TIGER

SUPER CUB EP

Backyard flying doesn't get any easier than this: this plane comes completely built and with its geared 280 motor, micro-receiver, two microservos and ESC installed. The 39.85-inch-span Super Cub features light foam construction and is designed for easy flying. A DC quick charger, a battery pack and a 3-channel radio complete the package. Tired of waiting for spring? The Super Cub would make a great indoor flyer!

Thunder Tiger; distributed by Ace Hobby Distributors (949) 833-0003; acehobby.com.

WHAT'S NEW *for* 2004

GREAT PLANES MODEL MFG.

Headwind "B"

This little ARF version of a '60s homebuilt flyer looks as if it was designed to have fun. It comes fully built and covered and can be assembled in just one afternoon; you need only add a 3-channel radio, two microservos, a geared 280 motor and a 5A ESC battery and prop. The 45.3-inch-span plane weighs just 9 to 11 ounces ready to fly, and it delivers slow, stable cruising at 10mph, and it loops and rolls as well. Who could ask for more?
Great Planes Model Mfg.; distributed by Great Planes Model Distributors (217) 398-6300; (800) 682-8948; greatplanes.com.

GREAT PLANES MODEL MFG.

YARD STiK

This fast-build, slow-fly ARF is ideal for both backyard and indoor action. The 41-inch-span plane features built-up, wooden wings with fiberglass leading- and trailing-edge reinforcement and a carbon-fiber fuselage. It also includes a 280 motor, a 3.5:1 gearbox and a nylon propeller. Because it's such a steady, slow flyer, the Yard Stik is ideal for new pilots. You'll just need to add a 3-channel radio with two microservos and a 5A ESC and battery. It costs just $50.
Great Planes Model Mfg.; distributed by Great Planes Model Distributors (217) 398-6300; (800) 682-8948; greatplanes.com.

EXPERIMENTAL AIRCRAFT MODELS

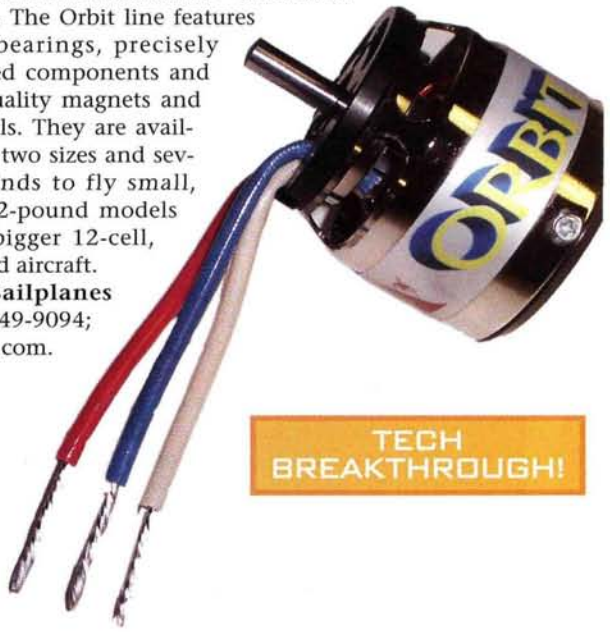
Zodiac XL & Velocity XL

Here's a different twist: RC models of experimental homebuilt aircraft! These planes are designed to be true to scale and feature balsa-sheeted, EPS foam wings and white Oracover covering. The 60.5-inch-span Zodiac XL costs $295, is fully built up and has fiberglass wheel pants and cowl and a clear plastic canopy; a .35 to .58 2-stroke or .45 to .60 4-stroke is recommended. The 80-inch-span Velocity XL retails for $449 and features fiberglass parts with balsa reinforcement; it's designed to use a .90 to 1.20 2-stroke. Each kit comes with all necessary hardware as well as a fuel tank, landing gear, engine mount and spinner.
Experimental Aircraft Models
(800) 292-1707;
(248) 473-7232;
rchomebuilts.com.

ICARE SAILPLANES

Plettenberg Orbit Motors

The popularity of electric "outrunner" brushless motors is on the rise because of their ability to turn large-diameter propellers without a gearbox. Now the folks at Icare have decided to distribute their own, and they say it's 10 to 15 percent more efficient than other "outrunner" motors. The Orbit line features triple bearings, precisely balanced components and high-quality magnets and materials. They are available in two sizes and several winds to fly small, 7-cell, 2-pound models up to bigger 12-cell, 4-pound aircraft.
Icare Sailplanes
(450) 449-9094;
icare-rc.com.



TECH BREAKTHROUGH!

DUMAS

Golden Age Racers

Looking for a few short building projects for the winter? These new 30-inch-span free-flight racers from Dumas would make excellent RC electric conversions. Take your pick between the Gilmore Red Lion, Laird Super Solution and Gee Bee R1. Each kit costs only $38.95 and comes with laser-cut wood parts, covering, decals, detail parts, plans and instructions. The parts in Dumas kits fit together so well that you can practically just shake the box and have an assembled plane fall out!

Dumas (800) 458-2828; dumasproducts.com.

MAXX PRODUCTS

HIMAX BRUSHLESS MOTORS

The engineers at Maxx Products are well-known for bringing new micro-gear to the forefront, so it's no surprise that they now offer a line of high-power, high-efficiency brushless motors. Motors in this extensive line are available with and without gearboxes and are guaranteed to spice up your flight time. The units pictured sell for $79.99 to $129.99 each, and more new motors are being introduced every day; check the Maxx Products website for details.

Maxx Products (800) 416-6299; (847) 438-2233; maxxprod.com.

SEAGULL MODEL

Spacewalker II .40 ARF

Would you believe this sport-scale, aerobatic classic costs only $120? The Spacewalker II features built-up construction, UltraCote covering, a complete hardware package and a fiberglass cowl and wheel pants. The plane has a 61-inch span and is designed for a .40 to .48 2-stroke.

Seagull Model; distributed by Horizon Hobby Inc. (217) 355-9511; horizonhobby.com.

HOBBYZONE

Aerobird Challenger RTF

This next generation of 3-channel, electric, ready-to-fly models offers multi-mode flight-control software for smooth, stable flight as well as more maneuverability. It also features the X-Port, which lets you add plug-and-play accessories like the Sonic Combat Module and Aerial Drop Module. The Challenger will retail for $149.99.

HobbyZone; distributed by Horizon Hobby Inc. (217) 355-9511; horizonhobby.com.

CLICK TRIP!

WHAT'S NEW for 2004

VMAR

Aero Subaru ARF

This 65-inch-span, semi-scale ARF comes with a blue or red polyester Polycote trim scheme, so the graphics are inside the covering—not stuck on top! The all-wood airframe also comes with all the hardware, including a metal mount, a servo tray, installed control rods and a spinner, etc. Add a painted, trimmed and cut fiberglass cowl, detailed cockpit and pilot figure, installed engine mount, optional flaps and a Pitts-style muffler, and you can't go wrong for just $129.95! Just add a .40 to .52 engine and 4-channel radio with five to seven servos; you don't even need to attach the control surfaces.
VMAR; distributed by Richmond RC Supply Ltd.
(604) 940-1066; richmondrc.com.

SIG MFG.

Four Star 40 ARF

Sig's Four Star 40 kit has been the intermediate plane of choice for thousands of modelers, and now it's available in ARF form! With all-balsa and ply construction and Oracover covering, the Four Star 40 ARF will be able to withstand those not-so-gentle landings as you get started in freestyle aerobatics and other fancy flying. This plane has a 59.75-inch wingspan, is 47 inches long and uses a .40 to .46 2-stroke or .40 to .50 4-stroke for power.
Sig Mfg. Co. Inc. (641) 623-5154; sigmfg.com.

MULTIPLEX

ROYAL EVO 12

The flagship radio for Multiplex, the Evo 12 can be fully customized to meet your specific needs and can be used to control both helicopters and fixed-wing aircraft. Along with nearly unlimited programmability, the Evo 12 can be used with an optional synthesizer and features a large, easy-to-read LCD display, 12 channels and 36 model memories. And here's the icing on the cake: it's easy to program, too!
Multiplex; distributed by Hitec RCD
(858) 748-6948; multiplexusa.com.

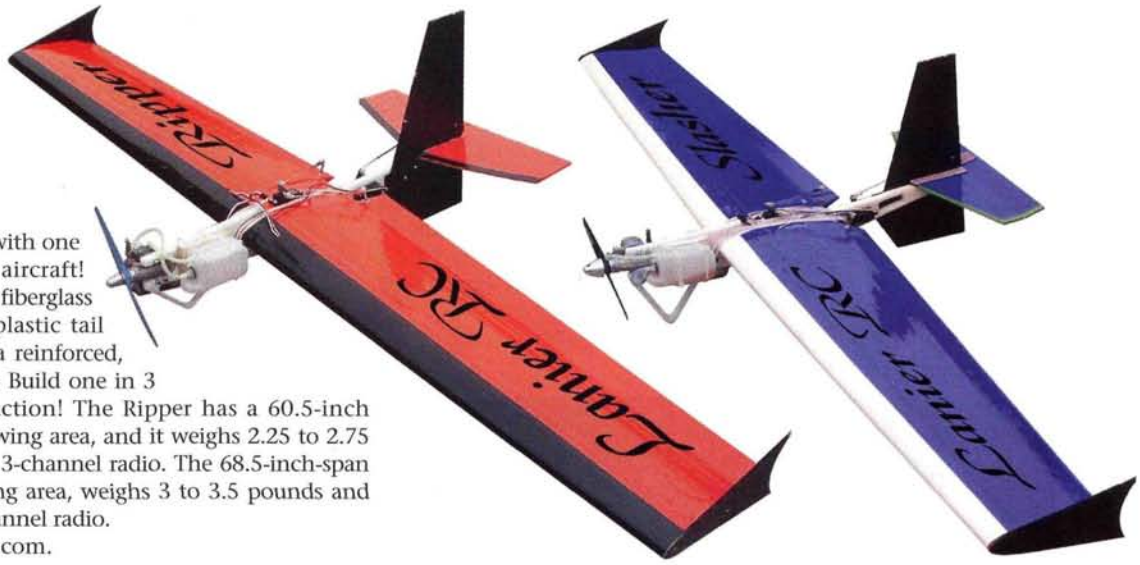
KONDOR MODEL PRODUCTS

P-38J Lightning & Gee Bee

Both of these new models from Kondor come with hydraulic retract systems and feature a fiberglass fuselage and built-up balsa wings. The P-38J has an 83.3-inch wingspan, is 60 inches long and uses two .40 to .46 2-strokes or two .52 4-strokes for power. The Gee Bee has a 70.9-inch wingspan, is 47.3 inches long and can be powered by a .91 2-stroke or 1.20 4-stroke.
Kondor Model Products (888) 968-7251; www.kmp.ca.

LANIER RC

Ripper & Slasher



These combat planes were designed with one thing in mind: to destroy enemy aircraft! Both kits come with a high-density, fiberglass fuselage, laser-cut plywood parts, plastic tail feathers, Aero-Glass wing spar and a reinforced, vacuum-formed plastic leading edge. Build one in 3 to 6 hours, and you're ready for action! The Ripper has a 60.5-inch wingspan and 456 square inches of wing area, and it weighs 2.25 to 2.75 pounds. It requires a .15 engine and 3-channel radio. The 68.5-inch-span Slasher has 591 square inches of wing area, weighs 3 to 3.5 pounds and requires a .25 to .30 engine and 3-channel radio.

Lanier RC (770) 532-6401; lanierrc.com.

SIG MFG.

3D MAYHEM

Looking for a plane that can handle 3D maneuvers? Check out the 3D Mayhem—a built-up wooden ARF covered with Oracover that comes with a Sig hardware package and assembly manual. The 72-inch-span plane can be powered by a .61 to .91 2-stroke or .70 to .91 4-stroke; it needs a 4-channel radio with five servos for control.

Sig Mfg. Co. Inc. (641) 623-5154; sigmfg.com.

CLICK TRIP!

THE ORNITHOPTER ZONE

CYBIRD PU

Whether it's flapping or gliding, this unique flyer is guaranteed to turn heads. With a 39-inch wingspan, the Cybird has a fiberglass fuselage, a flexible, plastic body shell and fabric and carbon-fiber wings. Equipped with a 1200mAh Li-poly battery, the 10-ounce "bird" can fly for 18 minutes! All versions come with the motor and servos already installed, and the wings, which are available in red, blue, or brown, simply snap onto its frame. The flyer also comes with replacement parts as well as a training CD, instruction manual and carrying case. The basic Cybird costs $229; add $60 for a 1200mAh Li-poly battery; a ready-to-fly Cybird costs $349.

The Ornithopter Zone (585) 654.5827; ornithopter.org.

HERR ENGINEERING

Little Extra ARF

This ½A plane offers giant-size performance! With a wingspan of 36.5 inches, the Little Extra features balsa and ply construction, Oracover film covering and a complete hardware package, including fuel tank, engine mount, duraluminum landing gear, wheels, tailwheel and control linkages. A .061 to .074 engine is recommended.

Herr Engineering; distributed by Sig Mfg. Co. Inc. (641) 623-5154; sigmfg.com.

WHAT'S NEW for 2004

SKY & TECHNOLOGY USA

Flyus

Designed for 3D flying, this .30-size machine has a 47.64-inch-diameter main rotor, is 47.24 inches long and 12 inches high. It has a high-strength, carbon-fiber tail boom, chrome-plated parts, fixed lower and upper swashplates and CNC-machined frame and gears.

Sky & Technology USA Co. Ltd., (310) 719-1372; sky-technology.net.

KAVAN

Albatros D.V. & Fokker Dr.1

Put on your scarf and goggles and get ready for some serious dogfighting with these little WW I classics! The 31-inch-span foam Albatros D.V. comes painted and with a Speed 280 motor, 4:1 gearbox, a propeller, scale decals and a complete hardware package. The 10.9-ounce plane also has shock-mounted landing gear and allows easy access to the battery compartment. Add a 3-channel radio, two microservos and a 5A ESC, and you'll be ready for battle.

If two wings are better than one, then how about three? The 21-inch-span, 11.6-ounce Fokker Dr.1 comes with a Speed 280 motor geared 4:1, a propeller, a hardware package and decals. It features shock-mounted landing gear for easy takeoffs and landings after your exciting sorties. You'll need a 3-channel radio, two microservos, a 5A ESC and a 7-cell battery pack.

Kavan; distributed by Sig Mfg. (641) 623-5154; sigmfg.com.

SIG MFG.

LI'L RASCAL

They don't come much better looking than this. The Li'l Rascal comes with all-wood construction, Oracover covering, one-piece wing and plenty of personality! The latest in the Sig Rascal line, this little flyer sports a 29.75-inch wingspan and can be flight-ready in just two or three hours. You need add only a 3-channel radio, two microservos, an ESC and a battery and then go fly! (A geared Speed 180 motor is included.) Sig notes that the Li'l Rascal also boasts great flight performance and can even handle relatively high winds. It's available in white with transparent red or blue covering.

Sig Mfg. (641) 623-5154; sigmfg.com.

THUNDER TIGER

3D SPIRIT

This 53-inch-span ARF aerobat has extra-large control surfaces for quick, precise flight response, and it features built-up construction with UltraCote covering. With a ready-to-fly weight of 4 to 4.5 pounds, the 3D Spirit has 725 square inches of wing area; it is designed for a .40 to .46 2-stroke or .54 to .70 4-stroke and requires a 4-channel radio with five servos.

Thunder Tiger; distributed by Ace Hobby Distributors (949) 833-0003; acehobby.com.

DAVE PATRICK MODELS

SUPER CUB

With details such as extruded-aluminum struts and bungee landing gear, this true ¼-scale Super Cub is sure to be a favorite. The 108-inch-span model features built-up, laser-cut-wood construction and film covering and weighs 11 pounds. A .90 to 1.20 engine would be an ideal match for this plane. It will cost $499.99.

Dave Patrick Models (815) 457-3128; davepatrickmodels.com.

WHAT'S NEW for 2004

HANGAR 9

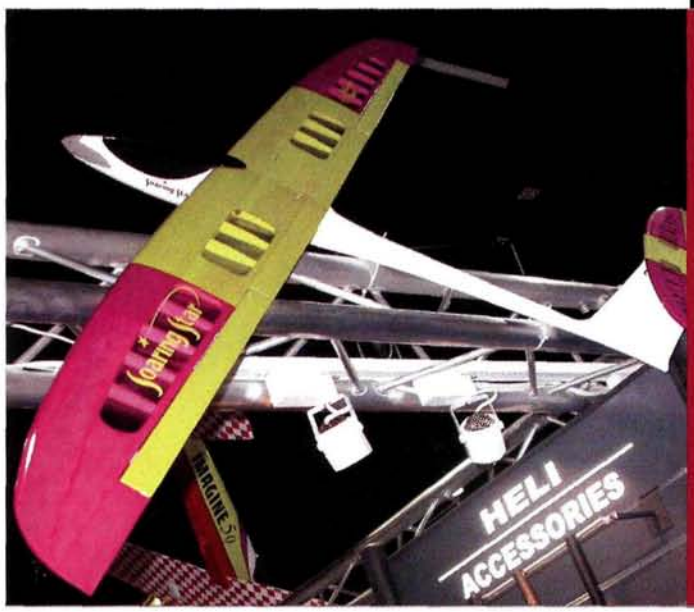
Arrow Trainer

With a semisymmetrical airfoil, this trainer offers more performance and is capable of performing more advanced maneuvers than your average trainer can. Its many features include an installed JR Quattro 4-channel radio system, installed, broken-in and pretuned Evolution Power Trainer System and UltraCote covering. The Arrow will have a street price of $299.99.
Hangar 9; distributed by Horizon Hobby Inc.
(217) 355-9511; horizonhobby.com.

THUNDER TIGER

DRAGONFLY 15

This 44-inch-span plane proves that park flyers aren't limited only to electric power! The full-house Dragonfly is designed to be powered by a .15- to .20-size engine and even has an aileron that features built-up construction with PVC adhesive film covering. It includes all the needed hardware and requires a 4-channel radio.
Thunder Tiger; distributed by Ace Hobby Distributors
(949) 833-0003; acehobby.com.



THUNDER TIGER

SOARING STAR

This 2-meter powered glider has a fiberglass fuselage, built-up and UltraCote-covered wing and T-tail and comes with a 540-size motor and 8x4.5 folding prop. You'll need a 50A ESC and 4-channel radio with four servos, and you'll be ready to soar! The 78.75-inch-span plane is 41.25 inches long and weighs 46 to 50 ounces for a wing loading of 14.3 ounces per square foot.
Thunder Tiger; distributed by Ace Hobby Distributors
(949) 833-0003; acehobby.com.

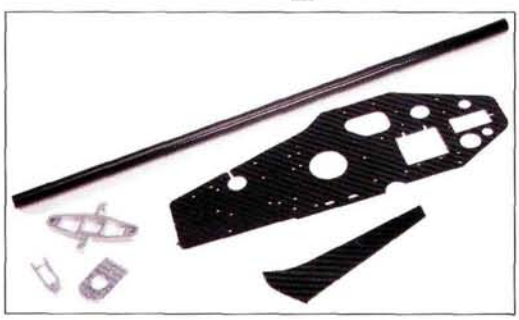
ASTROFLIGHT

110 DELUXE LI-POLY CHARGER

Li-poly cells are now a popular power choice for large electric models, but many of the lithium chargers on the market are designed to work only with cells of smaller capacity. AstroFlight solves this dilemma with its latest version of the popular 110 charger. The 110 Deluxe Li-Poly is specifically designed to charge and discharge 1 to 9 lithium-polymer cells at up to 8 amps of current. The new unit has green lettering on its front panel to distinguish it from the standard 110 Deluxe Ni-Cd/NiMH charger.
AstroFlight (310) 821-6242; astroflight.com.

CHOPPAHEDZ

Helicopter Hop-ups



Looking for replacement or upgrade parts for your LMH Corona helicopter? Check out the aluminum and carbon-fiber parts from Choppahedz. All metal parts are made of 6061 and 7075 aluminum and come in black, green, blue, red and, of course, aluminum; the carbon-fiber parts offer more strength and rigidity than stock plastic or wood.
Choppahedz (310) 283-0014; choppahedz.com.

TECH BREAKTHROUGH!

WHAT'S NEW for 2004

KYOSHO

CALMATO

Designed specifically for novice pilots, the Calmato features easy assembly to get in the air quickly and optimum durability to stay there longer. The tail and semi-symmetrical wing are preassembled and can be bolted easily to the fuselage and the linkages; the landing gear and steerable nose gear come installed on the 62.9-inch-span plane. It requires a .40 to .46 2-stroke and 4-channel radio with five servos. The Calmato will retail for $149.99.

Kyosho; distributed by Great Planes Model Distributors (217) 398-6300; (800) 682-8948; kyosho.com.

HOBBICO

NEXSTAR SELECT

Learning to fly has never been easier! Not only does the NexSTAR Select come with an O.S. Max .46 engine and Futaba 4-channel radio installed, but it also features an onboard Automatic Flight Stabilization system and aerodynamic enhancements to prevent the wing from stalling and spinning at low speeds. Add a video to take you through basic assembly and NexSTAR'S own edition of *RealFlight* (so you can practice the basics), and you have a package that guarantees success. The NexSTAR will retail for $399.99.

Hobbico; distributed by Great Planes Model Distributors (800) 682-8948; (217) 398-6300; greatplanes.com.

THE WORLD MODELS

P-51 and Spitfire GS

WW II fans will appreciate these new ARF offerings from The World Models. The 64.5-inch-span P-51 is 56 inches long and has functional flaps for smooth landings. It's designed for a .91 4-stroke and requires a 6-channel radio with seven servos. The Spitfire GS is IMAA-legal with an 80-inch wingspan, has functional split flaps and comes with retracts installed. It is 68 inches long and can be powered by a 1.60 2-stroke; a 6-channel radio with nine servos is required.

The World Models; distributed by AirBorne Models (925) 371-0923; theworldmodels.com; airborne-models.com.

GOLDSCALLOP INTL.

Tucano-Q

Now, here's a backyard flyer you don't see every day: a replica of a Brazilian Air Force trainer! An ideal winter project, this semi-scale kit features CNC-cut wood parts for the wing and tail, a high-density-foam fuselage, a canopy and hardware. The 30-inch-span, 15.5-ounce plane is fast and stable in the air and has great aerobatic capability. A Speed 400 motor, 3-channel radio and two microservos are recommended.

GoldScallop Intl. (416) 609-2468; goldscallop.com.

THUNDER TIGER

RAPTOR 90 & DEFENDER FUSELAGE

This top-of-the-line machine is available in three versions: the super-high-end R90 SE kit; a standard kit and a standard ARF version with a Pro 90H engine. The helicopter has a main rotor diameter of 62.2 inches; it's 18.3 inches high and weighs 10.58 pounds ready to fly. Add the painted fiberglass Defender fuselage, and you'll be ready for your next mission!

Thunder Tiger; distributed by Ace Hobby Distributors (949) 833-0003; acehobby.com.

Seventy-five years of Model Airplane News

LIFE. MADEMOISELLE. COLLIER'S. SATURDAY EVENING POST. Though these magazines found and held their audiences for years—and in some cases, for decades—they are gone now, relegated to their own corners of the Smithsonian and the recesses of our collective consciousness. At the same time, *Model Airplane News* has not only withstood the many challenges that proved to be the downfall of these memorable magazines, but it has also prospered. And it has done so, thanks in part to a century-long experiment in aviation that will one day lead us to the farthest reaches of the universe.

Our fascination with flight began with the Wright Brothers' first short hop across the dunes of Kitty Hawk and has grown steadily over the years, bolstered by Lucky Lindy's historic voyage across the Atlantic and Amelia Earhart's ill-fated trip around the world. And through it all, *Model Airplane News* has been there, applauding the many achievements of full-scale aviation, pioneering technological innovations in the modeling world and all the while embracing the dreams of so many to touch the heavens.

Whether it's because of the inspiring dream of flight or the lure of a thrilling and rewarding hobby, *Model Airplane News* is still here to celebrate its 75th anniversary. Its editors and staff thank you, our readers, for your loyalty and enthusiastic support. Here's to another 75 years aloft!

then & now

1929 Trotsky is expelled from the USSR by Josef Stalin.

NOW California voters recall Governor Gray Davis and elect actor Arnold Schwarzenegger in his place.

1929 October 29: the stock market crashes, closing at 381.17; U.S. securities lose $26 billion, signaling the beginning of the Great Depression.

NOW The stock market flirts with the 9800 mark.

1929 A first-class stamp costs 2 cents.

NOW A first-class stamp costs 37 cents.

1929 The Philadelphia Athletics defeat the Chicago Cubs in the World Series.

NOW The A's moved to Kansas City in '55 and then to Oakland in '68. And the Cubs still have not won a World Series since 1908.

1929 A brand-new Model-A Ford costs about $300.

NOW A new Ford Focus costs about $15,000.

1929 Tennis star Helen Wills wins the Women's Championship at Wimbledon. She is added to the All England Club's Roll of Honour.

NOW Tennis star Serena Williams wins the Women's Championship at Wimbledon. She is added to the All England Club's Roll of Honour and takes home a check for more than $1 million (£535,000).

1929 Penicillin is first used to fight infection.

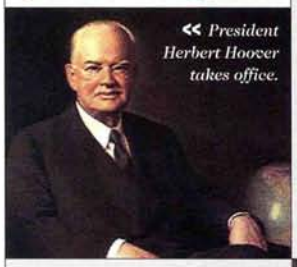
NOW An experimental treatment given to a teenager in Ireland halts the progress of Mad Cow Disease, known in humans as Creutzfeldt-Jakob disease.

1929 The U.S. population is 122 million.
NOW The U.S. population is 281 million.

1929 By the end of the year, the unemployment rate is 9%.
NOW The unemployment rate hovers at 6.4%.

In 1929...

>> The St. Valentine's Day massacre takes place in Chicago.



<< *President Herbert Hoover takes office.*

>> The Geneva Convention agreement is signed by the governments of 47 countries (Japan and the USSR do not sign).

Jacqueline Bouvier is born. >>

>> Also born this year: Martin Luther King Jr., Imelda Marcos, Yasser Arafat, Arnold Palmer, Bob Newhart, Audrey Hepburn

^^ The first around-the-world flight is completed by the airship Graf Zeppelin.

Wyatt Earp dies >>

<< "Lithiated Lemon" carbonated drink goes on the market. Its name is later changed to the slightly catchier "7-Up."

>> The Museum of Modern Art opens in New York City.

>> A 500,000-year-old skull belonging to a member of homo erectus is unearthed in China and becomes known as that of "Peking Man."

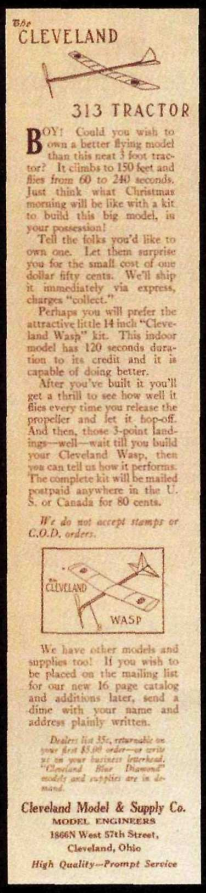
Leading the Way

OF MAJOR IMPORTANCE TO THE DEVELOPMENT and growth of *Model Airplane News* over the years have been the various people who have served as its editor. Many famous modelers and model aviation insiders have held this position at one time or another, and their tremendous skills molded *Model Airplane News* into the fine publication that it is today. On this, our 75th anniversary, we'd like to pay tribute to a few of these important and talented individuals.

Ad Classics

CLEVELAND MODEL SUPPLY CO.

Founded in 1926, the Cleveland Model Supply Co. has been with *Model Airplane News* longer than any other company has. An ad for Cleveland Model Supply first appeared in the December 1929 issue of *Model Airplane News*, and one can still be found within these pages today.



The CLEVELAND

313 TRACTOR

BOY! Could you wish to own a better flying model than this neat 3 foot tractor? It climbs to 150 feet and flies from 60 to 240 seconds. Just think what Christmas morning will be like with a kit to build this big model, in your possession!

Tell the folks you'd like to own one. Let them surprise you for the small cost of one dollar fifty cents. We'll ship it immediately via express, charges "collect."

Perhaps you will prefer the attractive little 14 inch "Cleveland Wasp" kit. This indoor model has 120 seconds duration to its credit and it is capable of doing better.

After you've built it you'll get a thrill to see how well it flies every time you release the propeller and let it hop-off. And then, those 3-point landings—well—wait till you build your Cleveland Wasp, then you can tell us how it performs. The complete kit will be mailed postpaid anywhere in the U. S. or Canada for 80 cents.

We do not accept stamps or C.O.D. orders.

The CLEVELAND WASP

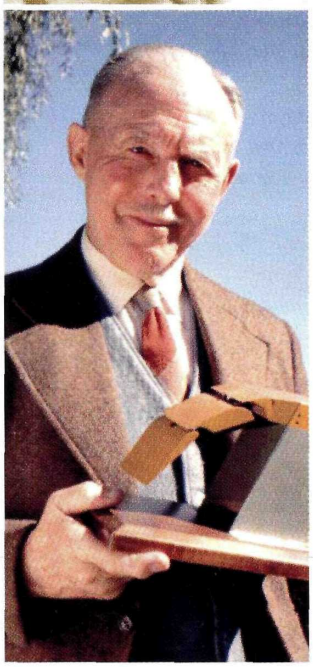
We have other models and supplies too! If you wish to be placed on the mailing list for our new 16 page catalog and additions later, send a dime with your name and address plainly written.

Dealers list 35c, returnable on your first $5.00 order—or write us on your business letterhead. "Cleveland Blue Diamond" models and supplies are in demand.

Cleveland Model & Supply Co.
MODEL ENGINEERS
1866N West 57th Street,
Cleveland, Ohio
High Quality—Prompt Service

George Campbell Johnson

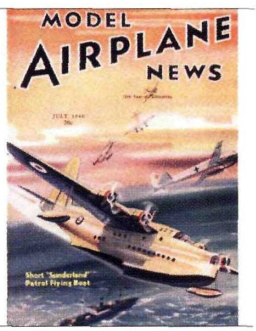
As owner, publisher and founding editor of *Model Airplane News*, George Johnson (grandfather of present day publisher, Louis V. DeFrancesco Jr.) is arguably the most important figure in its illustrious 75-year history. Keep in mind that in 1929, the entire world of full-scale aviation had been in existence for less than 30 years. In the beginning, model aircraft consisted primarily of gliders and rubber-band-powered (twisting strands of strip rubber!) models. Model designs were generally scale, or at least influenced by, full-scale aircraft. This was a humble beginning for the model aircraft hobby, but still an important start. As long as full-scale aviation continued to grow, so did the desire to build and fly model airplanes. That was the dream Johnson pursued.



Charles Hampson Grant

In 1932, Johnson hired Charles Hampson Grant to direct the editorial content and policies of *Model Airplane News*, and he remained in that position until 1943. Charles Grant manned the helm through some very important growth years for the magazine. During that period, modelers were introduced to their first gasoline-fueled, miniature aircraft engine (the Brown Jr.). As a result of this new power source, new types of model aircraft were developed, including free-flight models and U-control (also known as control line). Later in that same decade, we saw the very beginning of modern-day, radio-control models. At this point, the broadcast radio industry was only in its infancy!

Mr. Grant has been referred to publicly on numerous occasions as "the father of model aeronautics in America." During his tenure as editor of *Model Airplane News*, he was responsible for a tremendous increase in magazine circulation. His first article (February 1932) began a long-running series entitled "The Aerodynamic Design of the Model Plane." Ultimately, he published more than 300 articles on the design of model aircraft, including his most famous "The Grant Law of Spiral Stability"—a concept whose implementation eventually made pilotless aircraft stable in all conditions of flight.



Howard McEntee

From 1945 through 1950, a popular modeler from New Jersey, Howard McEntee, held the reins at *Model Airplane News*. In this postwar period, Howard helped influence the rapid growth of practical radio-control aircraft for the average modeler. He set the stage by publishing a variety of radio-equipment construction articles and how-to's that detailed general radio techniques.

In addition to the major advances in radio control, this same period brought us Ray Arden's wonderful invention: the glow plug. This tiny component essentially replaced gasoline-ignition engines with a simple, easy and lightweight form of model aircraft power. Tiny engines such as the K&B Infant .020 soon followed, and just as quickly, the pages of *Model Airplane News* became flooded with design and construction articles for models using ½A power. Howard McEntee made a name for himself in this new class of power with several designs for micro-size RC models.

After his death in 1972, members of Westchester Radio Aero Modelers, Inc. (WRAM) in Westchester County, NY, established a technical achievement memorial award in Howard's name. It's presented every year at their East Coast hobby trade show.

Bill Winter

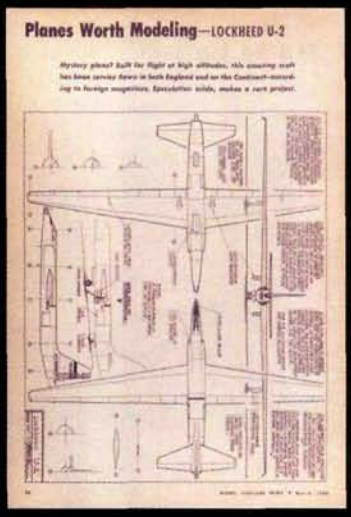
From 1951 until 1960, another famous modeler took on the role of editor of *Model Airplane News*—Bill Winter. Bill was a true model designer, builder and flyer. He created the monthly editorial column known as "M.A.N. At Work," which became a staple of the magazine for many years. During Bill's tenure, the FCC authorized the use of 27.255MHz as a radio-control channel on the then-new citizens band. That's when we saw RC really take off. This was the first time a modeler could build and fly RC with only a permit, instead of a ham radio license. *Model Airplane News* quickly took the lead in this area by publishing articles on how to construct much of the initial 27.255 RC equipment. The famous Lorenz Two-Tube receiver appeared in the February 1953 issue. This was a landmark RC accomplishment that took the average RC pilot of that time out of the dark ages and into the world of simple and reliable radio control.

The biography of Bill Winter that's on file in the AMA Library clearly details his lifelong involvement with and devotion to model aviation. During his career, he served as editor of just about every model aircraft magazine in existence. During his 10 years at *Model Airplane News*, he directed editorial and policy and contributed heavily to the growth of the magazine and the hobby as a whole.

Model Airplane News
FIRSTS

MODEL AIRPLANE NEWS A NATIONAL SECURITY RISK?

Holy smoke! *Model Airplane News* and the CIA? In the March 1958 issue, a scale 3-view drawing by Bjorn Karlstroan of the super-secret Lockheed U-2 spy plane was featured in the "Planes Worth Modeling" column. This was long before Francis Gary Powers was shot down (May 1, 1960), and the government was forced to admit that the U-2 aircraft actually existed. Hmmm ... the *Model Airplane News* article observed: "An unconfirmed rumor says that U-2s are flying across the Iron Curtain taking aerial photographs." It is said that government officials investigating the release of classified information visited the *Model Airplane News* offices on 5th Avenue in New York.



Victory Covers During the War years, *Model Airplane News* lent its steadfast support to the War efforts overseas by placing itself in the forefront of the efforts here at home with countless tributes to the American spirit. The covers that topped the pages of *Model Airplane News* between 1941 and 1945 featured some of the latest innovations in combat aviation and awe-inspiring patriotic themes that embodied the pride of a nation.

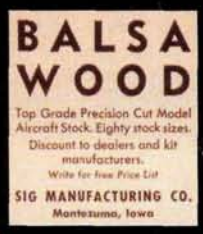
Ad Classics

America's Hobby Center

If, over the past 50 years or so, you've ordered from a modeling catalog, chances are, you're familiar with American Hobby Center—it remains one of the most well-known names in the industry today. This is its first ad; it appeared in the November 1945 issue of *Model Airplane News*.

Sig Manufacturing Co.

The very first ad for Sig Manufacturing to appear in *Model Airplane News* hit the newsstands in the March 1952 issue. In it, Sig offered balsa wood; today, Sig produces some of the highest-quality ARF planes and kits on the market of every make, model, and style imaginable.



Walt Schroder

A very vocal, influential and hard-working model-aircraft enthusiast, Walt Schroder succeeded Bill Winter as editor. He held that position from 1960 until 1970 when he moved up to become the president and publisher of Air Age (its parent company). While Walt was editor, the radio-control facet of the hobby took a quantum leap forward with the advent of modern digital proportional control as pioneered by such companies as Kraft Systems, Orbit, Heathkit, Micro-Avionics, EK-Logictrol, Cannon, World Engines and others. These modern radio-control systems allowed simultaneous and proportional control of the ailerons, elevator, rudder and throttle functions. Along with these advances came the rise in popularity of the new nickel-cadmium (Ni-Cd) batteries that permitted us to operate radio systems for long periods of time. We could then quickly recharge them, and they did not have to be discarded for many years.

In addition to these advances in electronics, model-building techniques were also rapidly improving with the introduction of iron-on covering material and the so-called "instant cements" such as CA. All of this new technology required modelers to learn new techniques, and *Model Airplane News* took the lead in that educational process.

Art Schroeder

When Walt Shroder was promoted to president and publisher in 1970, he hired Art Schroeder to take on the role of editor. A recently retired school superintendent and a very experienced model aircraft designer, builder and flier, Art went on to serve three stints as editor, ending in 1984. During the '70s, Art encouraged the building and flying of larger models (¼ scale and up) powered by converted chainsaw gasoline engines and the large-scale engines that were designed specifically for hobby use that soon followed. Flying 20- to 50-pound RC models is commonplace today.

In the mid-'70s, Art and Walt joined forces with Bill Bennett, a dedicated hobby enthusiast and owner of the Circus Circus Hotel in Las Vegas, NV, to establish the now-famous annual Tournament of Champions (TOC). The large-scale models that competed in TOC every year brought much publicity to the hobby and sport of model aviation.

In 1979, Art and Walt collaborated on a series of articles that instructed modelers how to build their own digital proportional RC system (the Blue Max). It was a tremendous effort and one that introduced many people to the inner workings of the RC hobby.

A careful observer will also note that electric flight began to emerge during Art's reign. Modern electric motors and constantly improving battery technology have made this into a hobby all its own. Today's electric planes range in size from ¼ scale down to 1-ounce indoor RC models.

Construction Classics

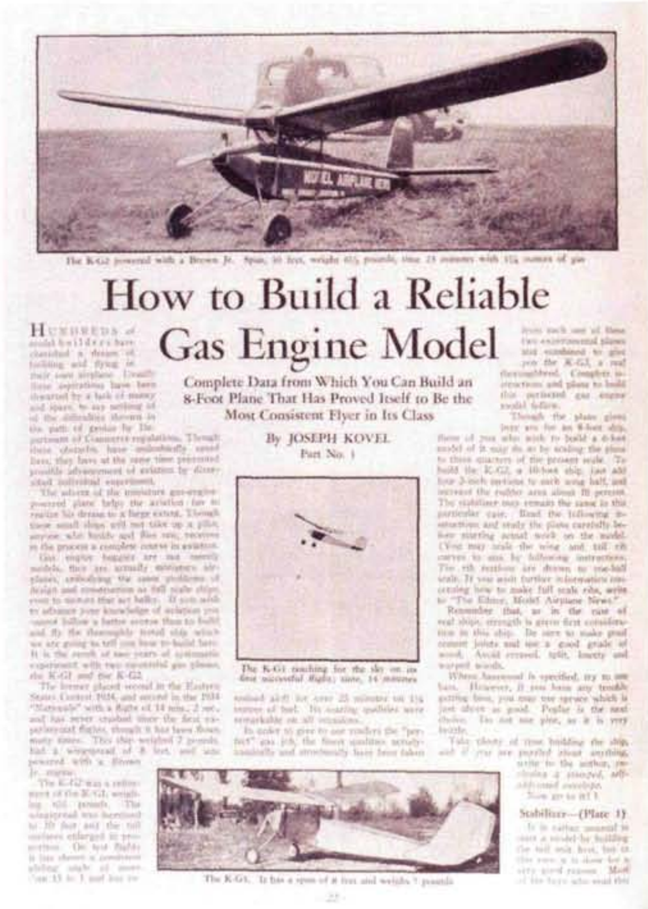
OVER THE YEARS, *MODEL AIRPLANE NEWS* READERS have been privy to many interesting and significant model designs in the form of construction articles. As a devoted, long-time reader, I continue to look forward to the magazine's arrival each month, eager to set my sights on the newest design feature. From free-flight and control-line to RC models, the pages of *Model Airplane News* have not only kept pace with the evolutions of the hobby, but they've also led the way.

Many famous designs have been featured on these pages; most notable are those of the '50s and '60s, which featured incredible developments in almost every facet of the industry. These allowed the average modeler the opportunity to build and fly the same models as the experts. With that said, the following are what I consider to be some of the most memorable model designs in the history of *Model Airplane News*. This is by no means intended to be a comprehensive list—just a few highlights to set you adrift down memory lane. — *Nick Ziroli, Sr.*

Ad Classics

GUILLOWS

Guillows is a name that needs no introduction. It's one many modelers have come to know and trust as the source of some of the most popular kits produced over the last 75 years. Well-known for their classic designs, the folks at Guillows are still hard at work today laser-cutting some of their most famous WW I kits. This is the very first Guillows ad ever to grace the pages of *Model Airplane News*. It appeared in the February 1933 issue.



How to Build a Reliable Gas Engine Model

Complete Data from Which You Can Build an 8-Foot Plane That Has Proved Itself to Be the Most Consistent Flyer in Its Class

By JOSEPH KOVEL
Part No. 1

KG Old Faithful

Designed and built by Joe Kovel and Charles Grant, this free-flight gas model appeared in the April and May 1935 issues of *Model Airplane News*. In August 1935, the Old Faithful set a world endurance record of 64 minutes and 40 seconds.

Bob Cat

One of the most notoriously popular models ever to appear in the pages of *Model Airplane News*, the Bob Cat was a world-class pylon racer designed by Bob Violett. The Fédération Aéronautique Internationale record-holder first appeared in the February 1973 issue of *Model Airplane News*.

Rudder Bug

The brainchild of Walt Good, who is considered by many to be a founding father of model aviation, the Rudder Bug was one of the earliest models designed strictly for RC pattern flying. It was so successful that it was later kitted by Berkeley Models as the Royal Rudder Bug.

RUDDER BUG

PART ONE

Completed framework ready to cover is simple and rugged

By Walter A. Good

THE *Rudder Bug* exemplifies the new trend in radio control models—simplicity. It is a far cry from the prewar "giant" R.C. models and a pleasant departure from freeflight gas R.C. conversions. Here's a model designed especially for existing radio equipment; it embodies many design features which are unique for radio control models.

In recent years it has become steadily apparent that the radio control gear is no longer the limiting factor in controlled performance. Strangely enough, the number one problem is the design of the model! The general impression of radio control builders at the 1948 Nationals was that final performance depends about 75% on model design, and 25% on radio gear—of course, with lots of practice added.

Thus, since the model design has assumed such importance, what are the design factors involved? Briefly they are: overall size and payload, stability, number of controls, engine power, accessibility of gear, poweron-poweroff characteristics, landing gear, and ruggedness. These factors are discussed in detail below.

The *Rudder Bug* has almost 6 sq. ft. of wing area, the wing spanning 6' with a 12" chord. It weighs in at 74 oz., which includes 16 oz. for the radio gear. The 1 lb. payload is easily carried. The body has a semi-scale appearance with a cabin which sports two king-size access doors. The length is 49". The tricycle landing gear makes for good take-offs, and landings too. Power is an inverted *DeLong* 30. The radio control gear is a standard Beacon Electronics set, consisting of a transmitter, receiver and rudder escapement. Only rudder control is used which has been found to be very effective, hence the name *Rudder Bug*.

The *Rudder Bug* was in the drawing stage for several years. Almost a year of limited sparetime was consumed in the building—it wasn't quite complete in time for the 1948 Nationals! During six months of flying, the ship has logged 63 flights and verified many of the design ideas involved. Now let's talk about the design.

Large R.C. models (above 8' span) are certainly beautiful flyers, as demonstrated by Charley Siegfried and others. They, unfortunately, do have two distinct disadvantages—they are awkward to transport, and require many long hours of building and repair time. How about small (below 5' span) models? They are easy to transport and build.

It has been observed, however, that they rapidly shrink from view during flight maneuvers, giving the operator the feeling he's "controlling" a small dark blob rather than an airplane structure. Small models may have difficulty carrying the necessary radio gear with ease. The 6' size of *Rudder Bug* is felt to be a reasonable compromise. Note how this size lends itself to conventional types of construction.

Good longitudinal and spiral stability are prime requisites of the radio control model. For this size model, Frank Zaic suggested that a 25% stab would be about right for a quick

(Turn to page 27)

Area under wing is designed to give large unobstructed space

Tricycle gear assures good take-off and taxiing qualities

An attractive model, *Rudder Bug* was designed for a purpose

Walt Good has retired faithful old Guff, a real veteran, and has produced this up-to-date design for radio control

Taurus

Considered the model to beat in the early 1960s, Ed Kazmirski's Taurus was the featured construction article in the January 1963 issue of *Model Airplane News*. The Taurus featured an extremely thick, 19-percent wing that helped it to maintain a constant speed, and its extra-long fuselage smoothed the beeped reed-control inputs. Powered by a .45 engine, the 70-inch-wingspan model was one of the first to incorporate strip ailerons, and it later became a Top Flite kit.

TAURUS

BY ED KAZMIRSKI

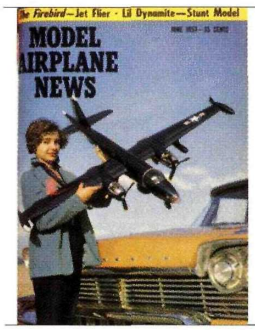
IN JUNE '60 M.A.N. IT WAS STATED THAT OUR AUTHOR'S ORION WAS THE BEST MULTI OFFERED TO DATE—IT WAS! NOW WE GO ONE STEP FURTHER AND STATE HIS TAURUS IS THE BEST. BY BEST IS MEANT JUST THAT—A LOOK AT CONTEST RECORD SHEETS THAT THE MAN IN THE STREET IS DOING THE WINNING

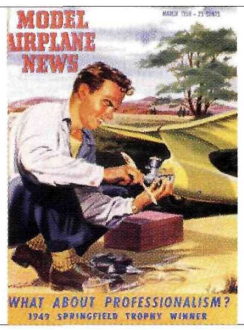
(Continued on next page)

Model Airplane News FIRSTS

FIRST ALL-RC ISSUE

Devoting itself to the continuing development of radio-control modeling, the September 1984 issue of *Model Airplane News* sports a subtle but significant change on its cover. The famous *Model Airplane News* subtitle, "The World's Premier Model Magazine," becomes—for the first time—"The World's Premier R/C Modeling Magazine." Although the last free-flight "VTO" column by Dave Linstrum is featured in the issue, the die was cast, and all future issues were dedicated exclusively to RC modeling.





Construction Classics

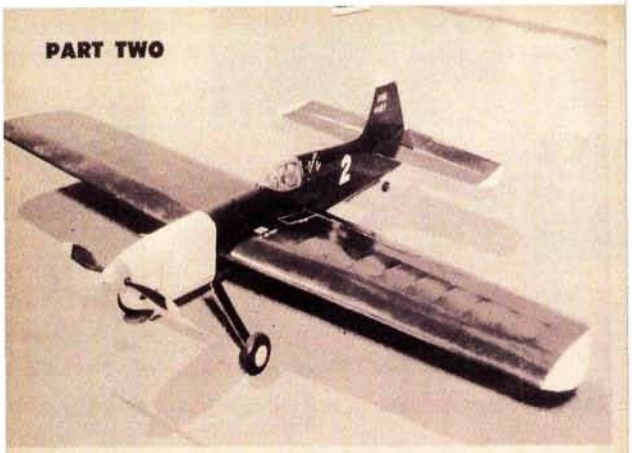
Ad Classics

L.M. Cox Mfg. Co.
At one time, Cox engines were extremely well-known and in demand. Today, they are legendary. The August 1952 issue of *Model Airplane News* featured the very first ad for L.M. Cox Mfg. Co. Inc. in which the folks at Cox proudly displayed their Space Bug .049 engine. The company (and its engines) would eventually go on to fuel the enormous growth of the ½A market and write its own page in the history of the hobby.

Futaba
When pulse code modulation (PCM) first became part of the radio-control vernacular in this December 1984 ad for a Futaba 8-channel radio, it represented the wave of the future. A modern pilot probably wouldn't buy a radio without it.

Nobler

Appearing in the June and July 1952 issues of *Model Airplane News*, the Nobler was a trend-setting control-line stunt model. Designed by George Aldrich, the Nobler won the 1952 Plymouth Nats and nearly took home top honors in the '52 Nationals. The Nobler was the first larger, heavier model to make good use of flaps, setting a design standard that is still followed today. An RC version was later kitted by Top Flite.



Stunting CAN BE Smooth

by GEORGE ALDRICH

Plans and directions for building the Nobler, outstanding stunt job that placed high at the Nats and won Plymouth finals.

▸ Take two sheets of nineway grained 1/8" sheet balsa and cut them to proper length. Cut inside bracer pieces of same type of stock. Firewalls are 1/8" plywood. Pin bracers onto inside of the sides and mark position of the motor mounts on bracers. Cut out the portion that motor mounts would ordinarily be cemented to. The mounts should now be cemented in place. (Full proof cement is recommended.) Make sure they are in proper position and cement all bracer pieces in place except those that fit in front of forward firewall. Drill holes that are to take "J" bolts into second firewall. Bend landing gear to shape; mount it on firewall. Cement firewalls into slots in bracers and place unit in clamps or vise to hold alignment until dry. Add 1/8" square piece at rear of fuselage.

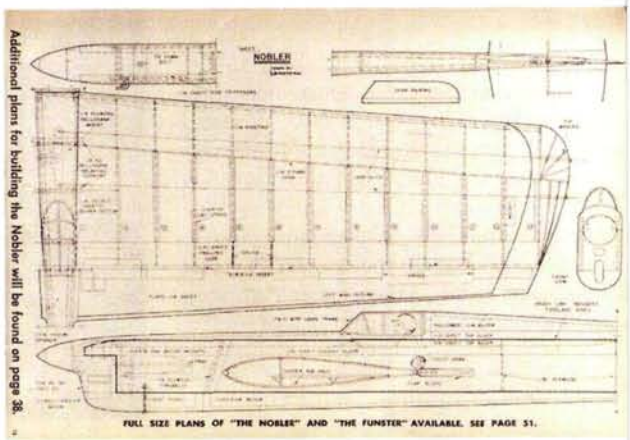
Start wing construction. Notice that center four ribs are double covered with 1/16" sheet behind 3" leading edge sheeting. These four ribs must be recessed 1/16" more top and bottom than the others.

Number one rib outline is shown on side view of fuselage. Recessing on number two rib is not shown for clarity. Cut remaining ribs and sand smooth. Make notches in ribs, being careful to cut them in an every other one sequence. The position for all notches in the ribs is shown on end on number 13 rib.

Select a very hard piece of 1/16" sheet balsa for D-tube spar. Put sections together and cut spar to shape. Slip ribs on spar but do not cement. Take two sheets of medium grade 3/32" x 3" x 36" sheet and cut it down center so that you have four pieces 1-1/2" x 36". Mark the rib position on these pieces, remembering that one length runs through center and is spliced out in middle of each panel.

Remove two number one ribs and cut 1/4" square holes to take bellcrank mount supports. Cut 1/4" square supports and have ready for assembly. You must now work very quickly. Pin the 3/32" trailing edge pieces on the board, cementing the splice as you do so. Put a line of cement on each rib end and lay panels down on trailing edge as you slide the 1/4" square pieces in place and cement. Pin and cement each rib in position on marked places. Cement two spar ends together, double coating several times with cement. Each rib should be cemented in place now where they form a cross-lap joint on spar. Be sure to block up the tips to allow for wing taper.

The fuselage should be dry by now. Cut 1/16" sheet balsa horizontal braces and cement in place. These serve only as supports until 1/16" plywood formers are put in place later. Blocks, both top and bottom, are of soft quality. Cement together and clamp 3/8" x 2" x 36", the 1/2" x 2-1/4" x 36" and 1-1/2" x 1-5/8" x 15" blocks and set aside to dry. Mark and cut off at 90 degree angle portion of the 1-1/8" x 2-1/4" x 36" block that will be used as removable cowl. Spot cement block in place and cut roughly to shape. Finish rear part of carving and sand roughly. Remove this portion and hollow out to approximately 1/4" wall thickness and sand. Start on top block. In 3/8" x 2" x 36" block, cut a 1/8" groove 2-9/16" back of spinner line, 3/8" deep. This is for Fox only. Measure for different engine. As 2" wide block is centered on 2-1/4" block, you have 1/8" overhang, which makes a flush arrangement when top piece is set in place. Spot cement top block in place and carve to rough shape. Cut off excess wood, which (Continued on page 38)

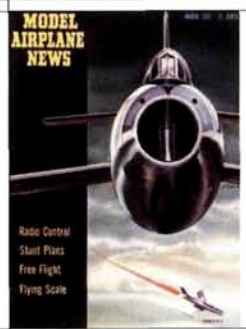


Additional plans for building the Nobler will be found on page 38.

FULL SIZE PLANS OF "THE NOBLER" AND "THE FUNSTER" AVAILABLE. SEE PAGE 51.

Smog Hog

The February 1957 issue of *Model Airplane News* featured the R.E. Bowen-designed Smog Hog. The 3-channel, high-wing RC pattern plane was highly aerobatic and took home top honors at the 1956 Nationals. The 74.5-inch-wingspan plane required a .19 to .35 engine for power and was among the most popular models of its day.



Mark III Kwik-Fli

1967's Top Multi plane can be aptly termed "Top Bird of the Time" without fear of contradiction or need of justification—winner of the '67 Nats and Internats with many other local and regional wins easily establishes merit for this claim.

By PHIL KRAFT

Kwik-Fli Mk. III

Arguably one of the most popular pattern models ever published, the Kwik-Fli Mk. III first appeared in the February 1968 issue of *Model Airplane News*. Originally designed by Phil Kraft, the 60-inch-wingspan RC pattern plane featured a functional design and simple construction that won many contests all over the world. Later kitted by Top Flite, the Kwik-Fli Mk. III remains a very popular and often-copied model.

Model Airplane News FIRSTS

FIRST SLICK PAPER AND COLOR PAGE

Having an entirely new and more professional look and feel, the July 1970 issue was the first issue to feature "slick" glossy paper. And with this change came the introduction to the first full-color feature page of print. Though several major advertisers had full-color ads on the inside and back inside cover pages and some 2-color ads were previously featured, the Radio Control table of contents page was the first feature portion of the magazine to be elevated to 4-color status. On that page was a photo of Ed Sweeney's VooDoo RC combat ship powered by a Veco .19. Originally a U-control model, Ed's VooDoo was converted to RC and equipped with Orbit 6-12 equipment.

Satellite 600

In January 1959, Robert Hunter let us in on the design intricacies of his Satellite 600—a free-flight gas model that took many trophies from the 1958 Nationals. Over the years, the Satellite 600 has been built in many sizes, covering just about every free-flight class, and it remains a popular design today.

Satellite 600!

by ROBERT R. HUNTER

Undisputed champion—1958. Sensation at the Nationals. Winningest ship in the U.S. Build yourself one of these great airplanes. In all the classes, .049 to .60, they are breath-taking performers.

(Editor's Note—This is the winningest free flight in America today. Pre-nationals wins were many. It dominated the Nats. As this is written, the Satellite swept first place in B and C at Thunderbugs Annual, Long Beach, Calif., taking high time and junior sweepstakes. The following week, at San Valeers Annual, Van Nuys, Satellites took firsts in A & B Open, first three in Junior, Second C Open, Second Night Flying, and Open Sweepstakes.)

The Satellite was developed shortly after a San Valeers club meeting, early in 1957, during which a sometimes violently worded discussion on the merits, or otherwise, of the class C model took place, and whether it would be advisable to continue such a class in our club competition and open contests. The modeler, whose memory will take him back to sights such as a field swarming with howling Hornets, McCoys, and Doolings on the business end of beautiful Sailplanes, and other such extinct birds, will still have a soft spot for built-up construction, elliptical flying surfaces, under-cambered airfoils, and the terrific glide resulting from such a combination.

In complete agreement with the large area, light-loading, high-power theory, I decided to "go for broke" on the first ship with an Italian Supre Tigre 60 job of over 1,400 sq. in. area. This monster, with a surprisingly fast VTO and climb, won consistently from March through September of '57.

My particular favorite, however is the "600", A-B-C combo, because it is so versatile. The "600" and all others of the line, with the exception of the .02, have racked up many wins at Phoenix, Taft, Tulare, Long Beach, and Los Angeles. The crowning touch came at the 1958 Nationals when three Jr. San Valeers swept the Jr. division, taking all available first places, and all but one second place. Records were established in SA, B, and C, for the ROW event.

Satellite is a composite of many models of the past and present, using methods to cut building time and weight, without sacrificing strength or utility, resulting in (Continued on next page)

Ground Breakers

Ad Classics

MIDWEST MODEL AIRCRAFT CO.

The very first ad for Midwest Model Aircraft Co. appeared in the May 1950 issue. It featured two control-line models and represented the start of a long-standing relationship between the company and our magazine. Today, Midwest is not only one of our longest running advertisers, but it also stands as a leader in the model manufacturing field.

DU-BRO PRODUCTS

In this August 1973 ad, Du-Bro Products introduced its new Hughes 300, semi-scale RC helicopter—undoubtedly one of the first of its kind to hit the market. Although you probably won't find Du-Bro listed as a good source of helis today, it is the first place you should turn if you find yourself in need of keepers or clevises.

The radio-controlled soarer in full flight

How to Control Your Plane By Radio

How a Radio Amateur and a Model Plane Expert Have Created One of the Most Practical Radio-controlled Planes That Has Ever Flown

By CLINTON B. DE SOTO

RADIO control of model aircraft has long been a source of great delight to experimentally inclined builders. Its accomplishment in a thoroughly practical and reliable manner has not so far been realized, however. Despite the showing in the number of radio-controlled entries at Detroit this summer, it would be a bold prophet indeed who would predict that to any one of these models lay the end of the search for practical ways and means.

One noteworthy angle on these attempts has been that, for the most part, they represented the work of gas model experts turned radio experimenters. Now a new line of attack has appeared from the opposite quarter. The radio experts of the American Radio Relay League, the national organization of radio amateurs, have been conducting experimental research into the problem at the League's West Hartford, Conn., headquarters during the past summer.

As a matter of fact, this interest on the part of the radio fraternity is especially fitting, since it is only with their cooperation that model builders as a lot can do much with radio control. The operation of any sort of radio transmitting equipment—equally as much that for controlling model aircraft as that for sending tons of code—requires the possession of federal operator and station licenses. And only amateur radio operators, with the exception of those few individuals possessing commercial experimental licenses, are authorized to carry on this sort of work.

The progress that has been made by the A.R.R.L. gang is such that it seems to hold the basis for widespread general investigations of this field in the near future—with building and designing in the coming winter months and actual flying next spring and summer.

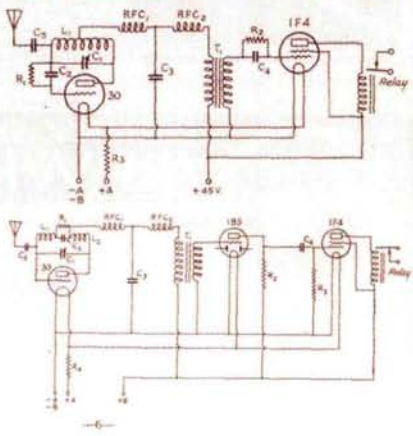
To tell the story chronologically, it should be stated that Ross A. Hull, noted ultra-short-wave radio authority and associate editor of "QST" and others of his associates in the League have long experienced a corollary interest in model aircraft. Indeed, Hull is one of the progenitors of modern model building activity, having brought the technique from Australia and introduced it to Hartford and surrounding areas in 1927 through a series of newspaper articles. He has built numerous models and has a sufficient knowledge of aerodynamic theory to qualify him for the second investigation.

Through the early months of this summer there developed a growing interest in radio control among this group. Tentative control systems were laid out on paper and discarded, the disadvantages of undue weight or complexity being too great. Finally, in late June, the idea for the present system germinated, and work went ahead in earnest. A 2-cylinder Ferguson engine was secured and plans for a 10-ft. gas job laid out. But then, as it usually does, fate stepped in.

In early July Hull and R. B. Bourne, another old-time model builder, made a trip to the National Soaring Meet then being held at Elmira. (A regular practice with Hull, who had first equipped soaring planes with radio for communication back in 1932.) There they found, of all things, a radio-controlled model sailplane, the "Hi-Hat," built by Carl W. Thompson, Jr., of Wilmington, and equipped with radio gear by H. M. Plummer, owner of amateur station WIDLS.

This ship was arranged to fly on directly with right rudder and the armature from a telegraph sounder served to give an alternative left

The "rudder stick" by means of which the pilot controls the plane from the ground



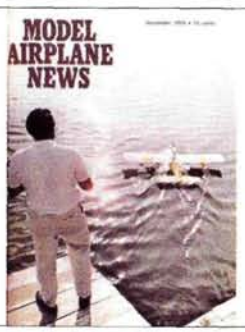
—6—

Arrival of Radio Control

Appearing the in the January 1938 issue, this is one of the first articles that detailed the growing concept of radio control and how to equip a model plane with the new technology.

Arden Glow Plug

This ad for the Arden Glow Plug appeared in the November 1947 issue of *Model Airplane News*. Designed by Ray Arden to replace the spark plug and spark-ignition accessories, the glow plug represented a revolution in engine design that is still found in the powerplants we use today.



FCC-Approved Citizen-Ship Radio

Vernon C. McNabb's ad for its one-of-a-kind Citizen-Ship radio first appeared in the pages of *Model Airplane News* in November 1950. The first FCC-approved radio system, the Citizen-Ship operated on 465 megacycles and did not require an operator's license. This marked the beginning of the race to radio control.

K&B Infant .020 Glow Engine

This tiny powerplant ignited the ½A revolution that allowed modelers to build smaller, less expensive gas models. The Baby Spitfire .045 and the OK Cub .049 quickly followed the Infant into production. First word of this breakthrough came via this ad in the January 1949 issue of *Model Airplane News*.

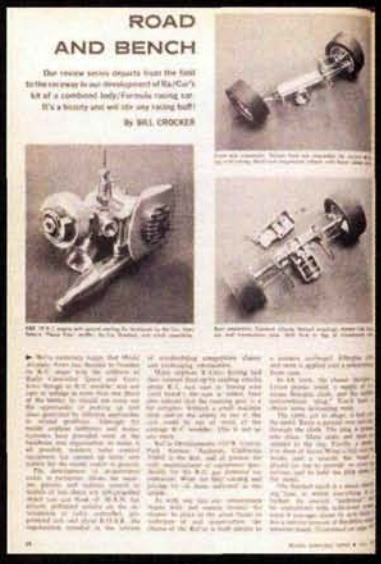
Space Control Proportional RC

This ad, which appeared in the December 1961 issue, marked one of the most important breakthroughs in the history of radio control. The Space Control was the first commercially available, fully proportional RC system. Many fliers cut their RC teeth on the Space Control radio system. It opened the proverbial floodgates, and many manufacturers soon followed.

Model Airplane News FIRSTS

FIRST RC CAR REVIEW

Written by Bill Crocker as part of the July 1968 *Model Airplane News* "RC Speed & Sport" section, the first RC car review featured a K&B .19-powered car from RaCar Developments. Reported to be the first and only manufacturer of RC gas-powered car equipment, RaCar supplied the kit with a high-tech "Vibra Zorb" chassis underpan that had to be made by the modeler with fiberglass cloth laid over a provided polyurethane foam core. This supported the rest of the components. The engine (with a cooling modification) as well as the clutch, flywheel assemblies, a rear-end differential unit and a clear Lexan Indy/Grand Prix-style car body completed the package. Price for the entire car with factory-assembled subassemblies was $170. This "Road & Bench" review sewed the seed that led to the first issue of our first sister publication, *RC Car Action*, in the summer of 1986.



Ground-Breakers

The Age of Proportional Control

Written by E.L. Rockwood, this article introduced the modeling world to the Reed selector radio, which is considered the precursor to the modern concept of proportional control. It appeared in our August 1949 issue.

E-Power Motors

Ushering in the age of electric-powered flight, this ad from AstroFlight appeared in the November 1972 issue of *Model Airplane News*. The concept was fittingly dubbed "the quiet revolution," and 30 years later, the revolution continues.

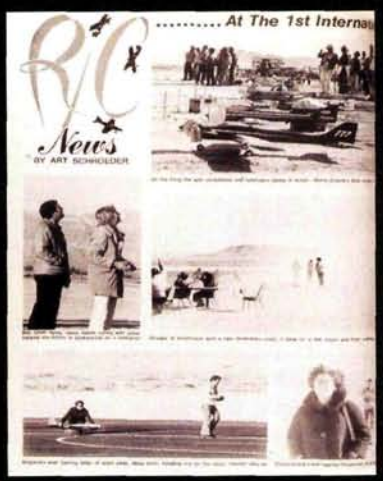
MonoKote

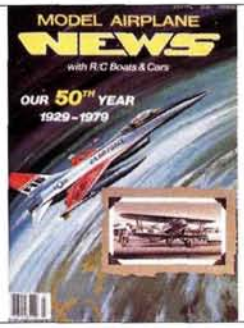
This ad, which first appeared in our April 1966 issue, marked a watershed of sorts in the modeling community. The introduction of MonoKote meant that paint was no longer a modeler's sole finishing option. Originally available in six colors, this heat-shrinkable Mylar plastic quickly exploded in popularity. Today, one would be hard-pressed to find a modeler who hasn't used MonoKote.

Model Airplane News FIRSTS

FIRST TOURNAMENT OF CHAMPIONS

In its 45th year of publication, *Model Airplane News*, along with the Circus Circus casino, co-sponsored and reported on the first international Tournament of Champions (TOC) aerobatic competition. In his March 1975 "RC News" column Art Schroeder introduced the now-famous Las-Vegas-based event. Walt Schroder (then *Model Airplane News* publisher) and Circus Circus president Bill Bennett formulated the basic format in the fall of 1974. In its initial incarnation, the TOC was an FAI Class D pattern event that drew 32 international contestants (21 from the USA) for a shot at the $11,000 prize purse. Together with the contest director Jerry Nelson, chief judge Jim "Doc" Edwards and the host organization, the Las Vegas RC Club, Walt and Bill set the standard for aerobatic excellence that lasted until 2002 for a total of 18 championships. Who was the winner? Hanno Prettner from Austria with his Super Sicoroly (featured on the cover).






radio

control

news

by EDWARD J. LORENZ

From far and wide reports are really hitting a spot!

New sealed nickle-cadmium batteries by Burgess. Batteries rechargeable, also, in 4, 9.6 volts.

Mare Burgess nicads. At press time, unknown if sintered plate type allowing heaviest drains.

Very nice, built-up frame, multi-channel ship by Viida Kotli, Tallinn, Estonia, USSR. Model-

ing pictures from behind "Iron Curtain," even from China, indicate progress all categories.

► George Bosc, Poughkeepsie, N.Y., can attest to the high capacity of sintered plate nickle-cadium cells. One of the servos in his Smog Hog hung up and the entire capacity of the two cells was drained into the servo motor. The motor got so hot the plastic housing melted. Heat traveled through the armature winding to the shaft to the bearings and there he was. You have a high power capacity with these or similar cells, so make sure everything functions properly.

John Mirmak of the Central Jersey RC Club has applied a phenomena discussed in the early days of crystal controlled transmitters. If a 12 to 24 in. length of wire is connected to one prong of a crystal socket and a crystal inserted, the combination can serve as a means of tuning super-regen receivers. Bring the crystal antenna to within about six inches of the receiver antenna and then tune the receiver. A super-regen receiver generates a wide range of RF signals, one of which is the crystal frequency. This signal is then reflected back through the crystal antenna and trig-

DETAILS by F. PIZZEY

CONTROL LINKAGES ON HOWARD DONNER'S RC DELTA "BUBS" (with latest modifications)

22 MODEL AIRPLANE NEWS • December, 1959

<< Introducing ... Ni-Cd Batteries

This installment of Ed Lorenz's long-running and popular column, "Radio Control News," appeared in the December 1959 issue of *Model Airplane News*. In it, Ed introduced us to a brand-new battery technology from Burgess—Ni-Cd. And, of course, for the next four decades, these cells would remain integral to our hobby.

CA Glue Makes its Mark

It probably isn't considered to be cutting-edge technology, but the introduction of cyanoacrylate adhesive in this "New Items" column from the September 1973 issue most certainly marked a revolution in the modeling industry. It quickly became the preferred method for joining airplane parts and allowed pilots the opportunity to make the quick field repairs that are commonplace today.


RETRACTABLE GEARS HAVE ARRIVED!

Retractable Gears Have Arrived

Recognize this one? When this article first appeared in the November 1962 issue, the concept of retractable landing gear was certainly not new. But Hal deBolt's idea to adapt it for use on an RC aircraft by incorporating a servo certainly was. In fact, the gear introduced here was the first of its kind!

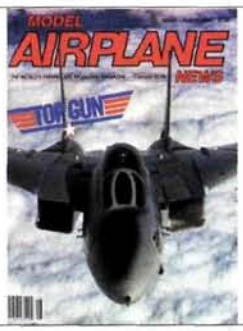
Ad Classics

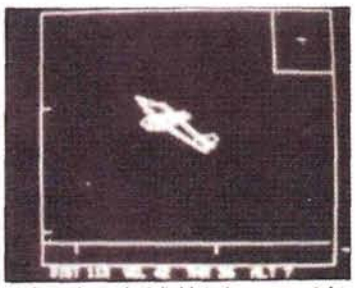
Comet Model Airplane & Supply

The name Comet Model Airplane & Supply Co. may not sound familiar to our younger readers, but we'd be willing to bet that the name Carl Goldberg certainly does. Comet, maker of some of the best rubber-powered scale models ever produced, is where it all began for Carl. This, one of its earliest ads, appeared in the December 1930 issue of *Model Airplane News*.

JR

The RC world was first introduced to JR radios in this February 1991 ad, and let's face it, we've been hooked ever since!





Orientation of airfield is in upper right portion of screen.

Virtual Flying

How's this for proof of rapidly advancing technology? This screen dump was taken from a review of Dave Brown's R/C Flight Simulator that appeared in the February 1986 issue of *Model Airplane News*. Although it may seem a bit primitive when compared with today's standards, just 18 years ago, Dave's simulator was the very first of its kind, and it taught a generation of new modelers how to fly. And today's budding pilots are still learning on a Dave Brown simulator—his newest is *RCFS 2001*.

Brushless Revolution

It's hard to believe, but it has been 10 years since brushless motor technology was first brought to our attention. This March 1993 installment of "Air Scoop" introduced us to the Aveox brushless motor, which promised to provide both improved efficiency and performance. Combined with modern lithium-polymer (Li-poly) batteries, the performance capability of brushless technology is rapidly approaching that of many internal-combustion engines.

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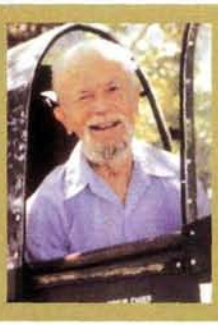
Ad Classics

Hobby Shack

Known by many as the supermarket of hobby goods, Hobby Shack (now Hobby People) was one of the first truly successful hobby store chains. It opened its first store in 1972. This, its very first ad in *Model Airplane News*, appeared in the May 1975 issue.



Jo Kotula

A talented artist and aviation enthusiast, Jo Kotula created some of the most memorable covers ever to grace the pages of *Model Airplane News*. Jo's dramatic imagery brought aviation to colorful life for millions of readers over the course of decades, starting in the 1940s. Jo's extraordinary talent played a pre-eminent role in the history of *Model Airplane News* and in the hearts of all its readers.

Model Airplane News

FIRSTS

FIRST BOAT REVIEW

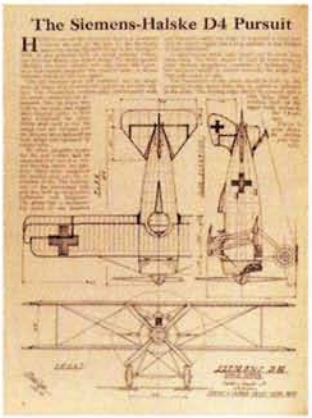
In the December 1971 issue, the first-ever review of a racing RC boat was published. Written by Robert Moore, "Pond & Bench" featured an all-wood, Dumas Drag'n-Fly 40. This 36-inch-long hydroplane was powered by a K&B .40 RR engine. With several detailed photos but no on-the-water pictures, this was a hands-on, building-bench article. As with the first "Road & Bench" review, this Dumas boat review was the first of many watercraft articles that eventually led to the launch of our second sister publication, *RC Boat Modeler,* that set sail in January 1987.

Written History


On the Frontiers of Aviation

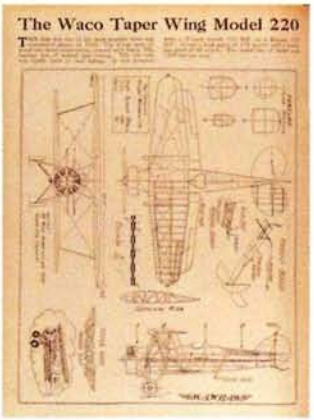
On the Frontiers of Aviation

Written by Robert C. Morrison, "On the Frontiers of Aviation" appeared within the pages of *Model Airplane News* from January 1934 to November 1941. The long-running series presented new developments in every facet of flight.


The Siemens-Halske D4 Pursuit

William Wylam Drawings

First published in 1933, William Wylam's many outstanding scale drawings were a popular feature in *Model Airplane News* for many years and were even rerun in the 1960s. Among his most noteworthy drawings were multi-issue features of such popular aircraft as the Stinsons, the Beechcraft D-17 Staggerwing and Lockheed Vega series.


The Waco Taper Wing Model 220

Willis Nye >> 3-View Drawings

The beautiful 3-view drawings by Willis Nye also premiered in 1933. Later produced by various artists, such 3-view drawings later became the enormously popular "Planes Worth Modeling" column—a staple of *Model Airplane News* for many years to come.


"GAS LINES"

Gas Lines

One of the earliest specialty columns, "Gas Lines" first appeared in the February 1936 issue of *Model Airplane News*. Because gas-engine technology was still in its infancy, modelers eagerly soaked up every ounce of information that this column provided. "Gas Lines" was a trusted source for gas-engine-operation information until it was discontinued in 1942.

Elements of Model Plane Radio Control

Information on the budding technology of radio control first appeared in the May 1939 issue of *Model Airplane News*. Authored by Howard McEntee, the "Elements of Model Plane Radio Control" column was the first to begin to depict a revolution of sorts in the modeling world. It was succeeded in September 1953 by "Radio Control News," when Ed Lorenz took on the task of reporting on the many breakthroughs in this new and fascinating facet of the hobby. In January 1965, "Radio Control News" took on a life all its own and was transformed into an entirely separate section of *Model Airplane News* that featured articles on everything from plans to new products to breakthrough technologies.

Ad Classics

Tower Hobbies

January 1973 was a historic issue in the advertising annals of *Model Airplane News*. For the first time, Tower Hobbies appeared among the pages. Today, it appears on many pages as one of the largest, if not *the* largest distributor of model airplane, boat and car products in the world.

Written History

Scrap Box and M.A.N. At Work

Over the years, the *Model Airplane News* editorial column has appeared under several different titles, and the most memorable of those were "Scrap Box" and "M.A.N. At Work." Written by Bill Winter, the editorial column ran under the title "Scrap Box" from April 1949 through January 1951, but it became the now-legendary "M.A.N. at Work" upon Bill's promotion to editor. The column remained under this heading through the reigns of Walt Schroder and Art Schroeder until it was changed once again in March 1979.

VTO

Authored by Richard Miller, Dick Black and Dave Linstrum, "VTO" ran from March 1962 to February 1979. A series of articles that detailed the many facets of free-flight models, the "VTO" column later became "Free Flight News" and was authored by Linstrum.

Simpl-Simul

John Worth's three-part series, "Simpl-Simul," appeared in the July, August and September 1958 issues of *Model Airplane News*. Considered revolutionary at the time, the Simpl-Simul system allowed simultaneous and proportional elevator and rudder control.

Air Ways

Running from 1932 into the 1960s, "Airways" was a popular two-page gallery of readers' projects. Though it was missing from the pages of *Model Airplane News* for many years, it made a triumphant return not too long ago. Today, it's known as "Pilot Projects."

Round and Round

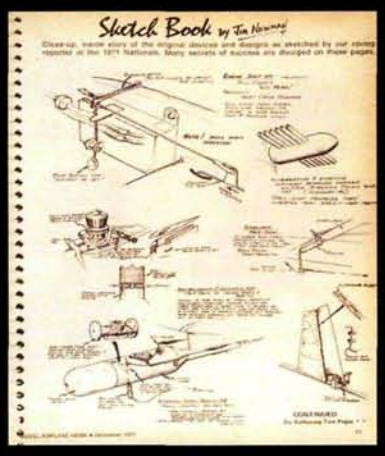
Started by Bill Winter in 1962, "Round and Round" introduced readers to the latest news and developments in the control-line world. The column ran through June 1966 and featured a number of authors over the years, including Peter Soule, Bill Netzeband, Jim Daves and Phil Granderson. In March 1975, Harry Higley's name began to appear at the top, and the title was changed to "Control Line News" in 1979. It ran as such until it was discontinued in April 1981.

Our heartfelt appreciation goes to Bob Aberle, Dave Gierke and Nick Ziroli Sr. for their extensive help in researching and writing this article.

Model Airplane News FIRSTS

"HINTS & KINKS" BY JIM NEWMAN

From my files, it appears that my first "Hints & Kinks" column appeared in the June 1975 issue. The column grew from a visit Walt Shroder paid to Carl Goldberg Models in early 1971 while I was working there. Walt asked if I would be going to the '71 Nats at Glenview, and I replied that I would be competing in FAI Free Flight. (Now that's a story in itself.) Walt then asked me if I would be prepared to cover the event with a sort of "roving sketchbook." I agreed, and after the Nats, a few pages of my sketches—complete with fake spring binding down the gutter—appeared in the magazine. I really loved his presentation. I'm sure that I have every page from that day on. From that "Sketch Book" sprang "Hints & Kinks." Throughout the early '70s, I illustrated numerous articles for *Model Airplane News*, *American Aircraft Modeler* and *RC Modeler* before Walt finally brought me aboard *Model Airplane News*. My last column was published in the May 2001 issue. That's 26 years. Wow! *—Jim Newman*



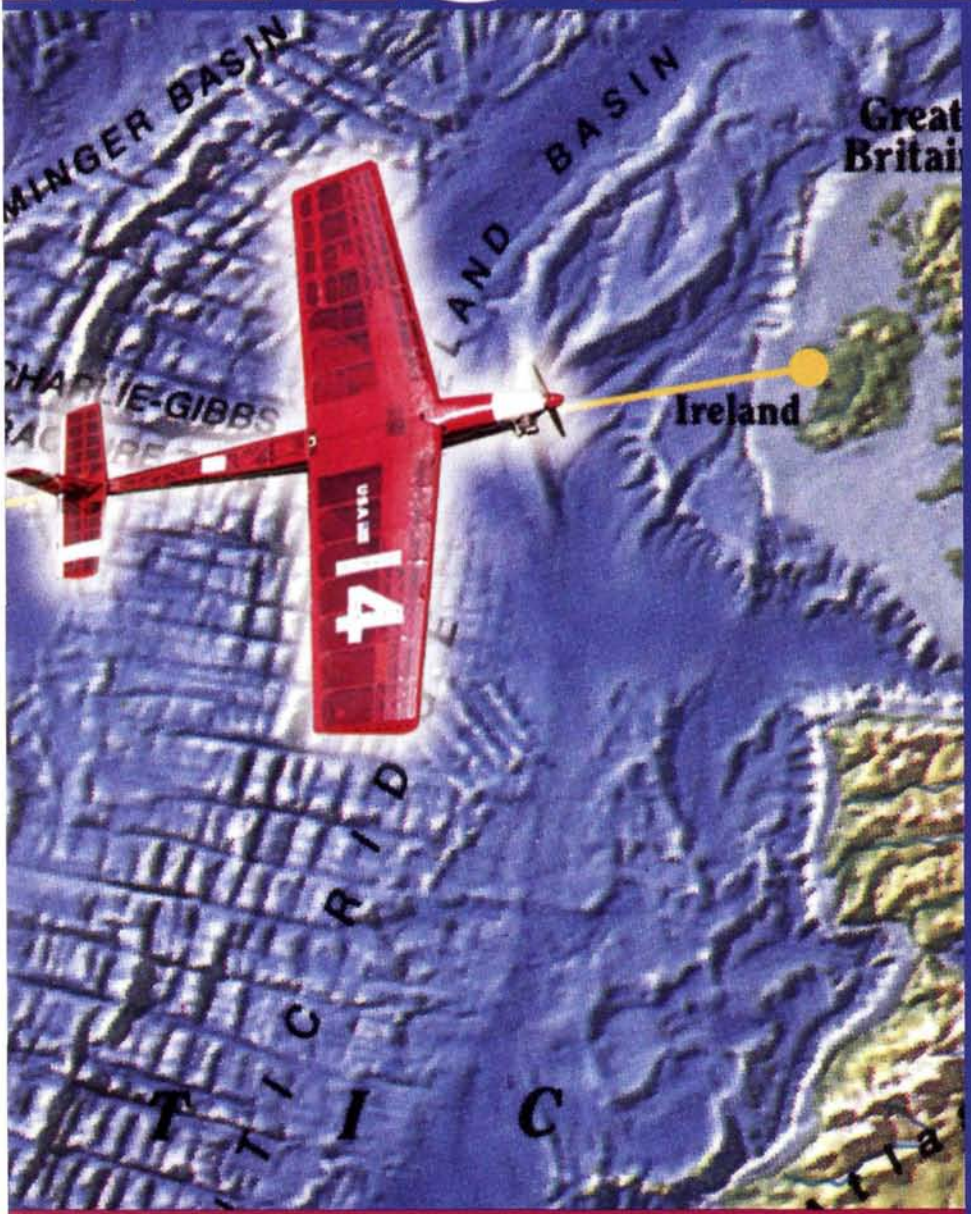
RECORD-SET TRANSATLA

MAYNARD THE MAN

If you know anything about Maynard Hill, then you know that he has been setting records with RC models since 1963 when he snatched the altitude record from the Soviet Union. On July 5, 1963, he almost doubled it with an altitude of 13,328 feet. From then on, Maynard was hooked, and he has since set 22 other records for distance, duration and altitude. If the FAI certifies this Atlantic crossing as a record, then Maynard will have a total of 25 records to his credit.

Born in 1926 in Pennsylvania, Maynard has been building model planes since his youth. In college, he trained as a metallurgist, and several years ago, he retired from Johns Hopkins University's Applied Physics Laboratory as a

TING NTIC FLIGHT



1,882 miles on less than 1 gallon of fuel

by Rick Bell

Thirty-eight hours and counting: members of the Irish landing team scanned the clouds and anxiously checked their watches, as the minutes seemed to drag. They were afraid that the model—along with their hopes for a record-setting flight—had crashed into the Atlantic only a few miles from its destination. Landing pilot and AMA president Dave Brown remembers, "At one point, our instruments began telling us that the aircraft was inexplicably diving and climbing 100 feet at a time, and then we lost contact with it."

Just 19 minutes later, the simple balsa-and-ply aircraft came into view, right on target. In a telephone interview, Dave noted, "A great cheer went up when we saw it, and four minutes later, I landed it in the field. It was so thrilling!" When asked about the significance of this record-setting journey, Dave paused, and then remembered that after the aircraft had landed, two young boys came over to check it out. "Wow! That's a pretty simple model; even we could build an airplane like that!"

Those young would-be modelers had summed it up: the accomplishment wasn't necessarily the fact that it had flown across the ocean, but that it had inspired and invited future generations to pursue their goals and push the limits.

robotic airplane expert. He's also a past president of the Academy of Model Aeronautics (AMA) and the Society for Technical Aeromodel Research (STAR). The idea of flying an RC model across the Atlantic occurred to Maynard 20 years ago, and he has actively pursued it since 1998. A lot of the data garnered for the crossing was accumulated from his many long-distance, cross-country flights. What's really remarkable is that Maynard is hearing-impaired and legally blind. To make his building chores a little easier to see, Maynard buys a red dye from Bob Smith Industries that he uses to color his CA a dark magenta.

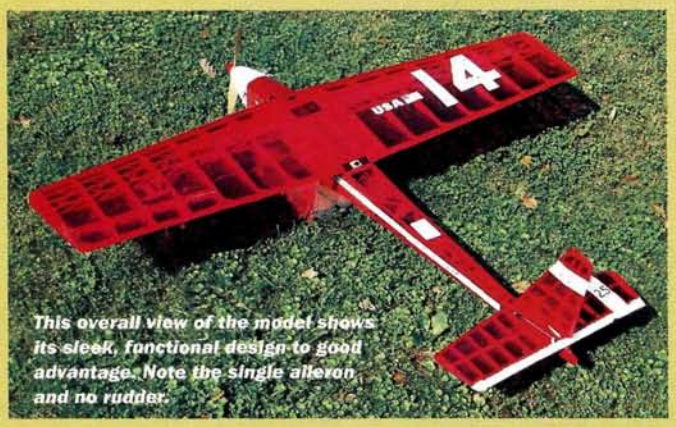
In the beginning, Maynard thought that flying a model 2,000 miles in 40 hours would be relatively easy. "But the longer we worked at it, the harder I realized it was. It's almost a miracle that we made it all the way," related Maynard from his Maryland home. His first plan was to follow the model in a yacht and guide it from there, but he soon concluded that the cost of the yacht—and sufficient beer for his friends to drink during the crossing—would be prohibitive. Maynard is obviously someone who never gives up on a goal!

PHOTOS BY RICK BELL

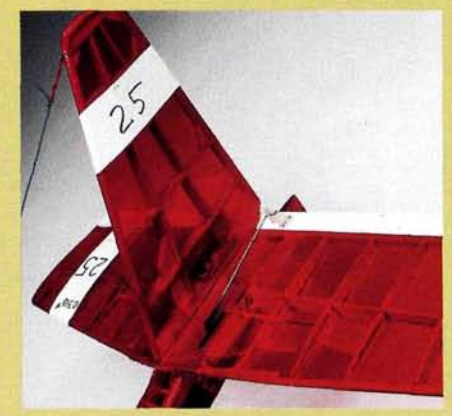
TAM 5 (Trans Atlantic Model), nicknamed "The Spirit of Butts Farm," is an unusual name for any aircraft, let alone an RC model. What this model achieved is also unusual: it flew nonstop across the Atlantic Ocean, fulfilling a 20-year dream of Maynard Hill and a dedicated team of believers. Hand-launched by Maynard and piloted by Joe Foster, on August 9, 2003, at 7:45 p.m. (local time) from Cape Spear, Newfoundland, the model flew a distance of 1,882.3 miles in 38 hours and 52 minutes before being landed in Clifden, County Galway, Ireland, on August 11 at 2:08 p.m. (local time) by AMA President Dave Brown, thus completing a flight of historic proportions.

How does one go about designing an RC model that, in addition to having the endurance and stability to fly unassisted by human input, still meets the stringent guidelines set down by the Federation Aeronautique Internationale (FAI) to qualify as a record-setting flight? That was one of the many questions I asked Maynard when I visited him in late September for an in-depth look at TAM 5.

TAM 5—THE MODEL



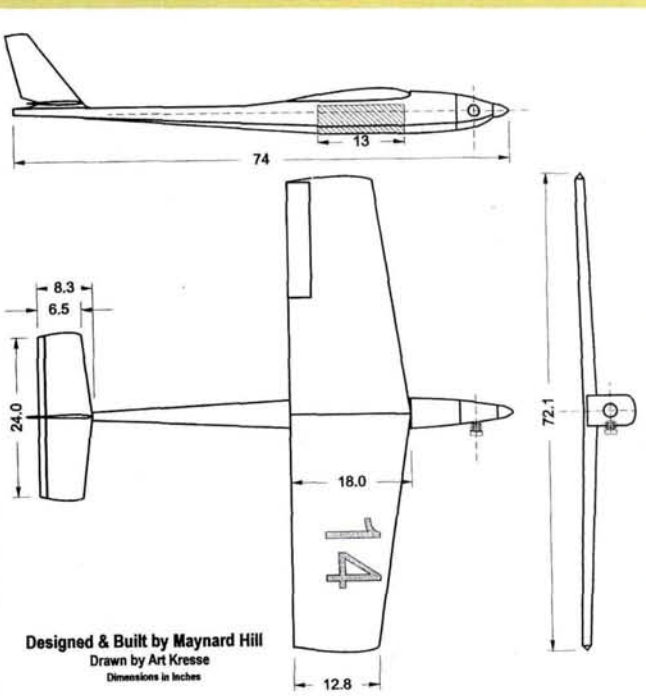
This overall view of the model shows its sleek, functional design to good advantage. Note the single aileron and no rudder.



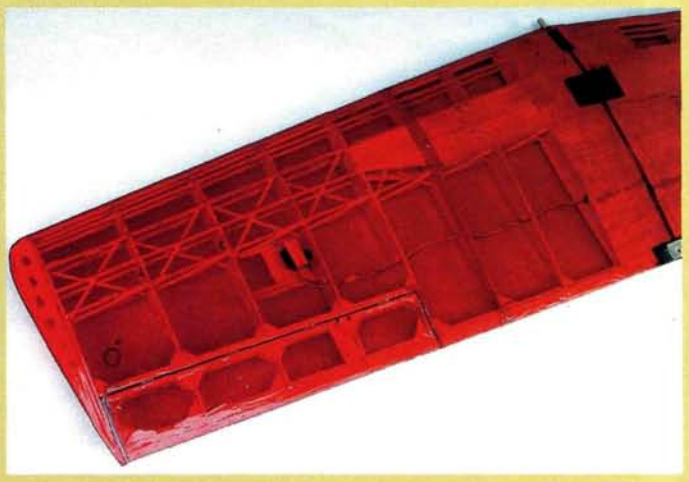
The removable tail feathers are very light and simple in design. You can see that there isn't any rudder. The stabilizer houses the elevator servo and a telemetry transmitter.

To submit the flight as a record attempt, the model had to meet FAI criteria, and Maynard's approach to this was simple. The plane could have a maximum weight of 11 pounds fueled and a wingspan of around 72 inches. The engine could displace no more than 10cc, and Maynard uses 1980's vintage O.S. .61 4-stroke engines. The model uses very traditional free-flight construction methods for both light weight and strength. As an example, the wing weighs only 1.1 pounds yet it can sustain more than 3G. The model has no landing gear (excess weight and drag) and uses only one aileron (in the left panel). The tail feathers are of open-bay construction and are removable. To further reduce weight, the vertical fin doesn't have a movable rudder, and the entire model is covered with transparent red MonoKote.

A Futaba radio system is used along with three S3103 microservos for aileron, elevator and throttle. The aileron and elevator servos are installed inside the wing and stabilizer to again reduce drag and to be as close as possible to the control surfaces. When viewing the model, you realize how simple and low-tech it really is; quite a contradiction to what's inside the plane. By the way, the model's name, "Spirit of Butts Farm," is in honor of Maynard's friend, 89-year-old Beecher Butts, at whose farm much of the testing and flying was done.



"The Spirit of Butts Farm"
TAM 5

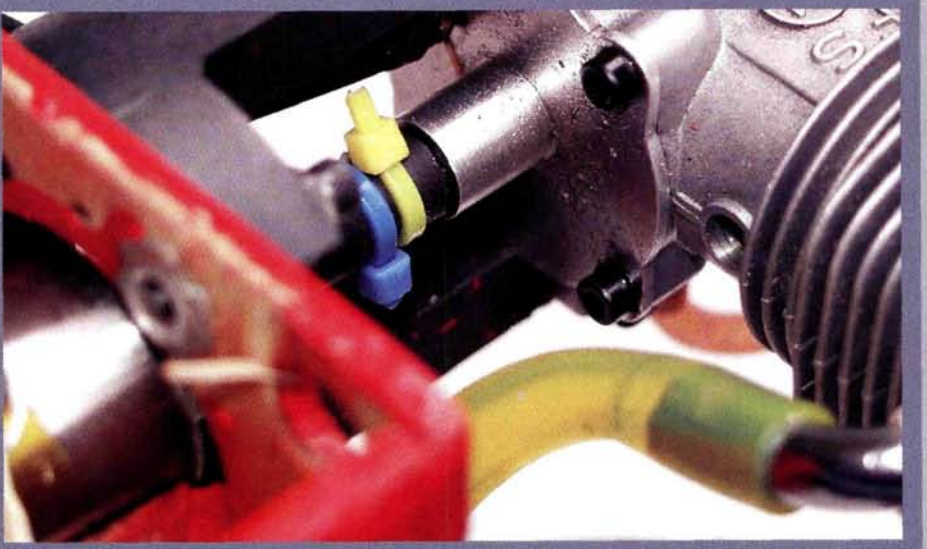


A view from the top of the left wing panel shows only one aileron is used, and its servo is installed internally. Note the extensive use of truss-type construction, which provides a lot of strength.

THE POWER SYSTEM

For the flight to be successful, a reliable engine is key. Over many years of testing, Maynard developed an engine-testing system that works for his needs, but you must understand that this isn't something for the average modeler. After all, most of us don't want to run our engines at 3,800rpm for 30-plus hours.

A close-up of the remotely mounted carb. Maynard modified the barrel to get the maximum efficiency needed for the flight.



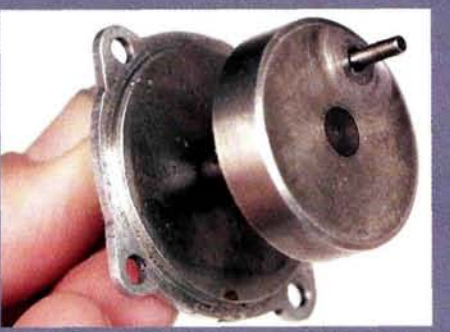
This is the alternator drive installed on the rear of the O.S. engine. A short length of vinyl tubing connects it to the alternator.

Each engine was a vintage O.S. FS .61 4-stroke from Maynard's extensive collection. The engines are basically stock but are modified for C&H spark-ignition systems. The props used are wooden Zinger 14x12s that Maynard modifies to his specifications.

Maynard runs each engine for 30 to 40 hours before it's flight-ready. He remotely installs the carburetor in the fuselage and uses a length of Tygon to attach the carb to the intake manifold. To obtain the fuel economy needed for duration flights, Maynard modifies the carb barrel with special cuts and grooves. The carb is calibrated to deliver about 2.05 ounces of fuel per hour.

The float with the drill bit. Very clever!

Maynard uses Coleman stove fuel because it burns clean with very little carbon buildup and produces a lot of energy when ignited. To prevent the engine from seizing, Maynard uses an industrial lube that's used in the food-industry; it, too, burns clean without carbon buildup.



A close-up of the link that connects the alternator to the crankshaft. The pin inserts into the crankshaft.

The fuel-delivery system is unique and uses nonstandard hobby items. For example, Maynard uses crankcase pressure to pressurize the fuel cell, but he uses a one-way valve from a fish tank. This valve allows the engine to pressurize the fuel cell to about 10 water inches of pressure. This is far too much pressure for the carb to handle, so Maynard designed a float chamber that precisely meters the fuel. The chamber follows Maynard's philosophy "simple is best." The chamber is a plastic jar that holds a float that's soldered together from thin brass sheet. The kicker, though, is the metering needle: it's a no. 40 drill bit that picks up vibrations from the airframe. As it vibrates, fuel swirls down the flutes of the drill bit and into the chamber, making the float rise; this in turn controls the fuel level in the chamber. The system works very much like a float chamber in an automotive carburetor.

The one-way valve used to pressure the fuel cell. It was designed for use in aquariums.

To power the electronics on board during the flight, Maynard again devised a simple method to generate power through the engine. A new backplate was machined that incorporates a pseudo crankshaft that couples the engine's crankshaft to drive a modified electric Aveox motor. The rewound motor acts like an alternator and provides electricity to run the autopilot, servos and spark ignition system. Again, the system works very much like an automotive electrical system. As you can see, a tremendous amount of work and modifications has gone into the engine, fuel system and carburetor to get the maximum efficiency and reliability from each.

Maynard's homemade float chamber is pure simplicity: a plastic jar, some sheet brass and a no. 40 drill bit.

Here's the sensor pickup for the ignition. A total of 8.5 million sparks were produced during the flight!

HOW IT WORKS

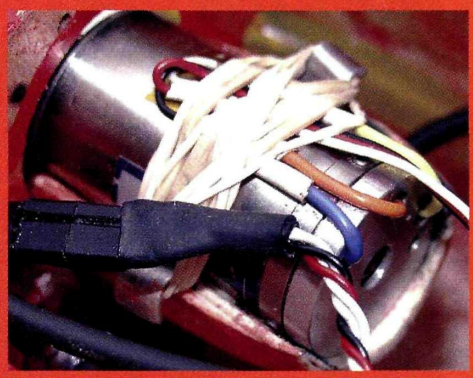
Don't let the model's simple form fool you: inside, it's a very sophisticated piece of equipment. Besides the receiver and servos, the model carries an alternator, a barometric-pressure sensor, a piezo gyro, an autopilot, a Global Positioning System (GPS) receiver, a tachometer, two telemetry transmitters and an electronic ignition for the engine.

Here's a rundown of how TAM 5 works. After launch, the model is flown via the transmitter to a predetermined altitude and then trimmed for straight and level flight. A signal is then sent from the transmitter to put the model into an autopilot mode. The GPS determines the model's position with respect to eight preprogrammed waypoints along the route. During the flight, the receiver is active to reject stray signals. The barometric sensor keeps the model at the desired altitude. From time to time, the sensor is calibrated for atmospheric pressure variations by applying data from the GPS altitude system. The tachometer regulates the engine, and the piezo gyro levels the wings whenever the roll attitude is disturbed.

The GPS receiver is installed in the center wing section. Hook-and-loop fastener holds it in place.

Navigation is carried out by software that generates steering commands to hold the model on a heading to fly along a line between the waypoint behind and the waypoint ahead of the model. A secondary software routine is applied to the steering to minimize any drift from crosswinds, thus keeping the model on track.

The position of the model during the flight is periodically transmitted to the operation center in St. John's, Newfoundland, by one of the telemetry transmitters. The transmitter sends data every minute to ARGOS satellites. (ARGOS satellites are used for wildlife tracking and are in a low polar orbit.) When one of the satellites comes within range of the model, data from the onboard transmitter is recorded in the satellite. Later, as the satellite passes over a ground station along its orbit, the stored data is sent to a receiver and computer system, which in turn sends the data to the St. John's operation center via email messages. The satellites record latitude, longitude, engine rpm, ground speed, altitude, elevator position and other data.



This is the alternator that supplies electrical power to all onboard systems. The engine's crankshaft provides the power to turn it.

As the model approaches its final waypoint, it's programmed to descend to 200 meters (600 feet). At the waypoint, the autopilot is programmed to turn the model back toward Newfoundland and fly for about half a kilometer (3/10 mile) and then turn back toward the waypoint. This circle pattern allows the landing pilot to acquire sight of the model, gain control of it and land it at the intended place. To alert the Ireland team of the model's impending approach, the team in St. John's used a cell phone to call them with the ETA (estimated time of arrival). When the model is sighted, the pilot (Dave Brown) punches in the proper code on the transmitter to gain manual control of the model. The pilot then sends a signal to kill the engine and guides the model to a landing. The system worked so well that Dave was able to land TAM 5 within 10 meters of its desired landing coordinates.

THE RECORD FLIGHT

It's said that the third time is a charm. For Maynard's team, however, the fifth attempt was the lucky one. The first three attempts took place in August 2002 and the fourth on August 8, 2003, the day before the successful flight.

The flight's start location and the time of year were carefully selected to take advantage of the prevailing winds and to maximize the chances of success. The team also chose this site to honor the accomplishments of Capt. John Alcock and Lt. Arthur Whitten Brown, who made the first transatlantic flight from Newfoundland to Roundstone Bog, Ireland, on June 14 and 15, 1919.

Maynard calculated that TAM 5 would need a tailwind so the model would average a ground speed of nearly 60mph to complete the estimated 32-hour flight with about one gallon of fuel. Right after Maynard launched the model, Joe Foster flew it to an altitude of approximately 820 feet, at which time the autopilot is switched on. The plane then encountered crosswinds, not the required tailwinds. TAM 5 was also gaining and losing altitude. To add even more concern, the engine wasn't running at the prescribed 3,800rpm. It, too, varied in rpm, probably from the loss and gain in altitude. Several hours into the flight, the needed tailwinds developed and TAM 5's groundspeed increased—just like everyone's hopes! All appeared well.

This is the barometric pressure sensor. Its function was to keep the model at a steady altitude.

Many hours later and almost 1,600 miles into the flight, the unthinkable happened: the observers stopped receiving data from the model. For more than three long, suspense-filled hours, TAM 5 wasn't heard from. Everyone thought its fate was sealed. But then, all of a sudden, the data flowed in again! TAM 5 was still alive! But not without problems: the tailwind was gone, and the model's speed was only 43mph with 280 miles yet to go. That meant TAM 5 was 6.4 hours away from land. Would the fuel supply be sufficient for a flight that now looked to be more than 39 hours long? Time would tell.

An overall view of the nose compartment. From left: on/off switch, backup battery, float chamber, C&H ignition module, carb and alternator. The throttle servo is mounted under the ignition module.

Just a little before 2:00 p.m. local time, the data received indicated that TAM 5 was 13 miles from its intended landing point and flying at 58mph. But how much fuel remained? Was there enough? Shortly thereafter, a member of the Irish team spotted TAM 5. Landing pilot Dave Brown flipped some switches on his transmitter, regained control of the model and landed it. The rest, as they say, is history!

2003 NEAT Fair

by John Reid

An unidentified B-17 takes off on another mission.

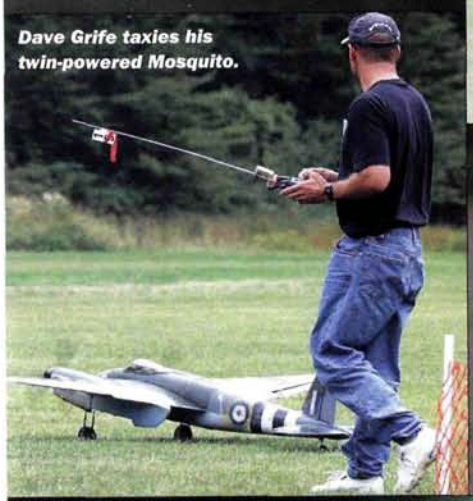
Electric flight takes off

Another year has come and gone with technology changing. Nowhere is this more evident than in the world of electric flight, where it seems as if innovation happens every day. One of the best places to find out what's new in electrics is at the annual NEAT Fair ("NEAT" stands for Northeast Electric Aircraft Technology). For the fourth year, the NEAT Fair was held at Pleasant Valley Campgrounds in Downsville, NY, this past September. Previously, the NEAT Fair has proven to be the premier showcase for new electric flight products. The latest developments in batteries, chargers, ESCs and kits often debut here. This time, modelers braved the wind and rain to check out a variety of new products, most of them from the 42 vendors. Some modelers gathered new ideas from casual conversations with pilots who flew some of the newest, hottest planes. This exchange of information is why so many electrics modelers have made this event their "must-attend" show of the year.

Left: Richard Baron was one of the youngest pilots at NEAT.

This sharp-looking F-5 is Hobby Lobby's newest addition to their ducted-fan lineup.

Dave Grife's "Ike" racer is coming at ya!



Dave Grife taxies his twin-powered Mosquito.

Keith Shaw's Fokker D-VIII.

Electric ducted-fan jets were popular at NEAT.

Gary Wright hovers his E3D-XL.

Who says e-powered helis can't fly 3D maneuvers? Check out this Logo 10.

This Great Planes Stuka was converted to e-power by **Model Airplane News** *"Powerlines" columnist Greg Gimlick. We'll feature this conversion in an upcoming issue.*

This Chipmunk is Ron Daniels' latest kit offering.

Participants relaxed at their campsites (just off the runway) and watched electric planes bore holes in the sky. The runway is a perfectly manicured lawn with plenty of flying room for even large electric planes. The campgrounds have lots of parking for the nearly 1,300 spectators, and there's ample room to spread out and enjoy the show. If you were one of the lucky ones to attend the 2003 NEAT Fair, chances are, you walked away with a new-found outlook toward electric planes. Models ranged from the smallest micro-flyers to giant-scale warbirds. Each type of aircraft exhibited outstanding performance and duration, largely because of advances in battery and motor technology over the past year.

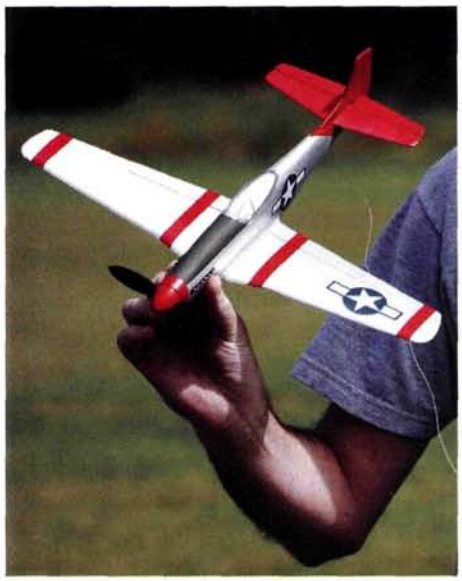
BEHIND THE SCENES

Of course, it takes a lot more than a great venue to make an event as successful as the NEAT Fair; you need lots of help and organization to make sure that everything runs like clockwork. Electrics modeler Tom Hunt was the CD, and Bob Aberle assisted. Members of the Bergen County Silent Flyers, Connecticut Silent Flyers, Grumman Wingnutz R/C Squadron and the Silent Electric Flyers of Long Island helped run the radio impound, flightlines, etc.

The Fair started on Friday, but many pilots showed up on Thursday and quickly filled the 135 pit areas that stretched nearly 1,500 feet. The flightline had nine pilot stations with three more spots at the end for the park/slow flyers. This all but eliminated possible conflicts and the chance of midairs with park flyers and fast-moving aircraft. Throughout the weekend, all 12 stations were usually full. The flying was carefully monitored so there wasn't a problem with radio conflicts. Each pilot had to get a frequency pin and their transmitter from the impound area, wait for an open flight station at the flightline and, if necessary, wait to be assigned a spotter. Each frequency pin was allotted only so much time, so if you were still flying when your time was up, the contest director reminded you that your frequency pin had to be returned to the board. The crew did an outstanding job and prevented any frequency conflicts. This is quite impressive considering that there were 279 pilots registered to fly more than 1,000 aircraft.

Jason Shulman wows the crowd with his Rhapsody during the noontime demonstration. He flew this plane at the F3A World Championships this year and placed seventh overall. It was the first electric model ever to compete in F3A.

This B-25 was the only plane that "landed" in the pit area.



Matt Keennon holds his small, very fast P-51D Mustang.

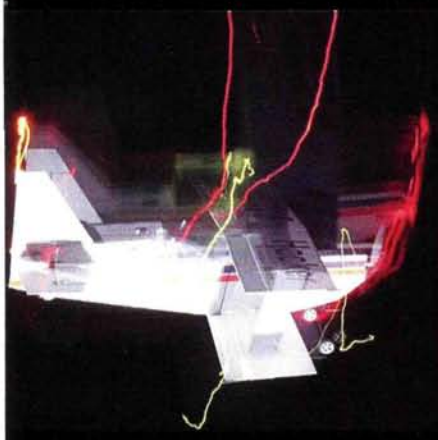
WHAT TO DO? WHAT TO DO?

There were so many things to do at the NEAT Fair that it was hard to decide which activities to attend; noontime

Continued on page 132

This nicely done Hangar 9 Cessna 182 Skylane takes to the sky.

Lighting up the night skies

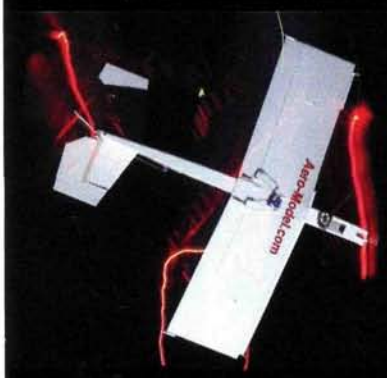


Jason Shulman added tiny lights to his Ultimate bipe for after-dark action.

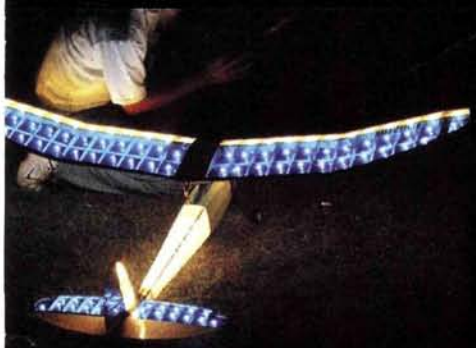
The fun didn't stop when the sun went down; many pilots just added lights to their planes and continued to fly well into the night. At times, the night sky looked like a gathering spot for UFOs. I couldn't help but wonder what someone not affiliated with the Fair might think these floating lights in the sky were. The Fayette Night Flyers of Atlanta, GA, gave a spectacular night-flying demonstration. Their brightly lit models pierced the night sky with flights that were choreographed to a wide variety of music. The demonstration ended with a 3D helicopter flight by Gary Wright that was—in a word—spectacular! The night-flying show alone is worth making the trip to the NEAT Fair.

To light the models, demonstration pilots used lights of different colors for the bottoms and tops of their models; other modelers had installed the same colored lights inside their planes and then covered them with transparent film of various colors on the tops and bottoms. Both techniques produced dazzling effects as the planes looped and rolled. One old-timer model dropped about a dozen glimmering lights that fell slowly to the ground—a magical effect.

Pilots who wanted to test their skills participated in a slow-flyer contest on Saturday night. Modelers had to navigate their models around a timed course without the use of ground-based lights. Both demonstrations were big hits with the participants, and the crowd stayed well into the night.

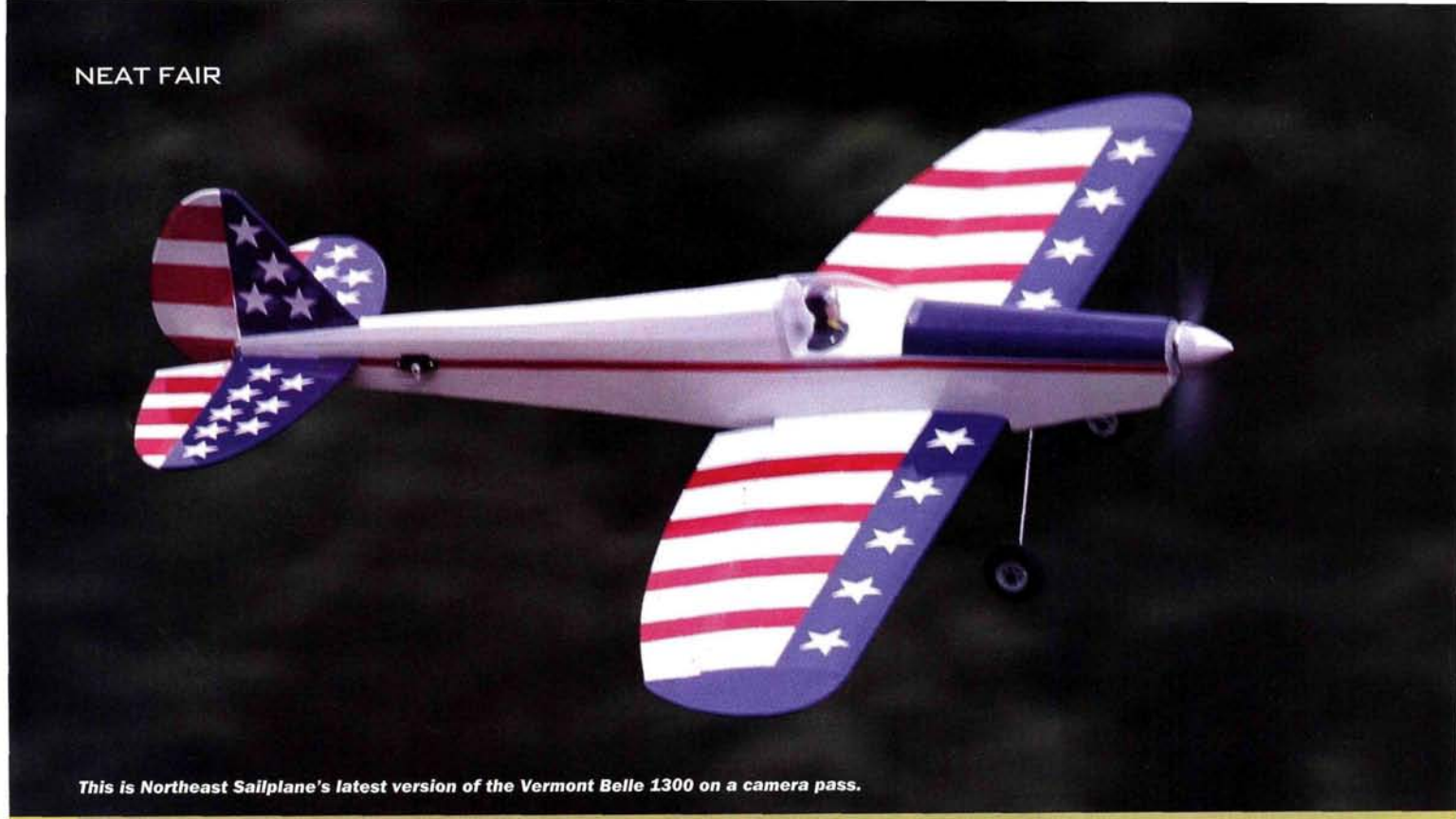


Here's a bottom view of the Ultimate.



This old-timer dropped about a dozen lights during its flight.

No problem seeing this Tiger Moth at night!



This is Northeast Sailplane's latest version of the Vermont Belle 1300 on a camera pass.

Short talks with a lot of information

The fourth annual Bergen County Silent Flyers mini seminars were held again at the NEAT Fair. These were casual meetings with some of the best modelers in the field of micro RC model technology, and presenters spoke about their particular areas of expertise. Each presenter was allotted 45 minutes for presentation, questions and discussion. Sergio Zigras and Joe Beshar deserve a lot of credit for gathering all of these talented people for this special meeting. The New Jersey Bergen County Silent Flyers Club hosted the seminars in its 30-foot-square tent, which came in handy for keeping out the high winds and rain on Sunday. The seminars were free and were well-attended.

Sergio Zigras, the principal organizer of the seminars, opened the meeting by introducing the presenters and welcoming everyone. Sergio began his discussion by giving the history of electric RC aircraft, and he came up with a variety of infrared (IR) systems used on micro airplanes and throttle control for scale control-line models. His IR systems evolved from single-channel bang-bang to "galloping ghost" control and finally to fully proportional multichannel systems. This setup, which he sells through his company, Ztron, weighs only 1.5 to 2 grams.

Joe Malinchak, full-size pilot and a modeler from the age of 9, is a great scale builder. He discussed the building, airbrushing and detailing techniques that he used on his beautiful micro-scale Piper L-4 aircraft, which I understand also flies great. The L-4 uses a micro 3-channel control system. The airframe is made out of balsa and is covered by Japanese tissue sealed with Krylon clear spray.

If you have any experience with micro RC, you've probably purchased some fine products from Bob Selman Designs. Bob talked about his work on the decoders that make magnetic-coil actuators work with "normal" RC receivers. He talked about his collaboration with Rick Ruijsink; he uses the best design aspects of Rick's system in his own line of magnetic-coil actuators, which I can say from experience are excellent.

Mark Denham was the funniest character of the bunch. He came all the way from Leicester, England, for the event. His wry sense of humor had us laughing. Mark described how the people at Aeronutz use 2mm-thick "wall foam" to make all types of micro free-flight and IR-controlled models; he then described how to paint the models using acrylics. He also talked about the history of Aeronutz and the 2-cell, 2-channel IR models they made very popular.

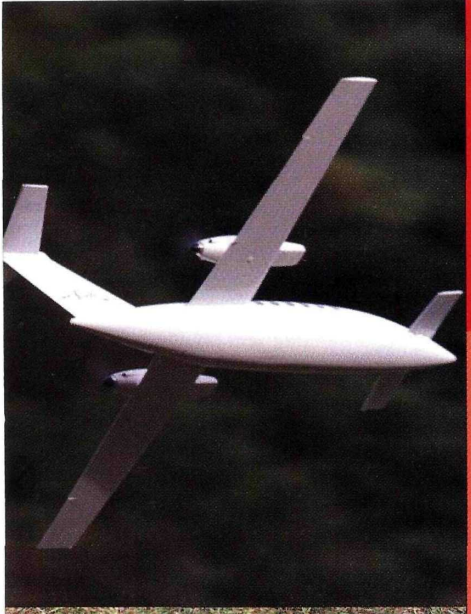
Gordon Johnson has been involved with micro RC for about three years. About a year ago, he founded the Boston Micronauts with a few friends; he described his unique method for molding light carbon-fiber propellers using heat-shrink tubing and Sculpey craft clay.

Fred Marks of FMA Direct talked about the company's successful line of Kokam Li-poly cells that he imports from Korea. He talked about how the deal came about and described some of the interesting situations he has encountered. Because Fred sells batteries that hold a lot of energy in a small, somewhat delicate package, he spoke at length about Li-poly safety. The one thing he wanted everyone to go home remembering is that they should handle these batteries with care. Li-polys can cause a fire if over-charged, shorted, or punctured, so always keep an eye on them as they're being charged.

I've recounted only a sampling of the great seminars that were offered. If you're interested in microflight or just want to learn about the latest micro-RC technology, then plan to attend the 2004 NEAT Fair. Come for the flying, but also stay for the conversation.

—Matt Keennon

Selling at the NEAT Fair



Top: this Simprop Piaggio Avanti P180 scoots by. Powered by two Mega 16/15/7 motors, this model was a crowd pleaser.

Second from top: Hobby Lobby introduced this sharp P-40 Warhawk at the Fair this year.

Third from top: Keith Shaw's "Goon" quietly awaits its flight at the noontime demo.

Bottom: Hangar 9's Super Cub powered by a Hacker brushless motor and a Thunder Power Li-poly battery made an excellent towplane.

The 42 vendors saw brisk sales throughout the Fair, and some vendors ran out of certain hot-ticket items. Some merchants used the NEAT Fair as a launch platform for announcing new products. Others showed new concepts that they hope will soon go into production so we can sport them on our models in the near future. Here are just a few of the new goodies I found as I meandered around the booths.

AstroFlight's new Deluxe Li-poly charger.

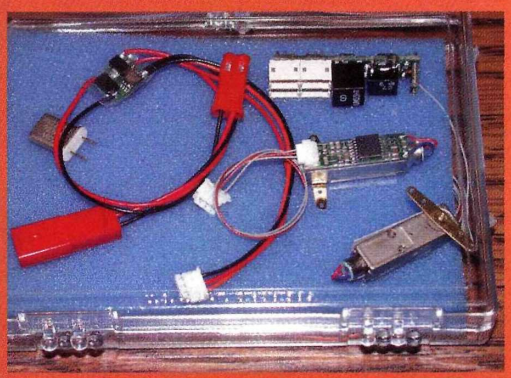
AstroFlight has a new version of its 110 Deluxe charger dedicated to charging Li-poly batteries. Called the "Deluxe Li-poly," it's capable of charging 1 to 9 Li-poly cells up to an 8A current.

A new vendor, Sombra Labs Inc., showed a pre-production unit of its new "Crystal-Less" 6-channel FM dual-conversion receiver. This employs a second programmer module that allows you to set any RC channel on 72, 75, 40, or 50MHz. You dial up the channel on the programmer, plug it into the receiver, press a button, and the new frequency is set. The receiver also automatically selects a high or low FM deviation, and it sells for $65. The programmer module will sell for $10 (you need only one of these).

The Proxflyer helicopter weighs only 90 grams.

FMA Direct displayed a complete line of assembled Kokam Li-poly battery packs that included its new 340mAh HD cells, capable of 20C loads. Other packs have capacities of 700 and 1500mAh and are capable of 10C loads.

FMA also has a new style of connector and connector blocks that make it easy to achieve parallel-pack hookups. I noticed that the company also had a new 30A, state-of-the-art ESC with many automatic features.



Cirrus micro RC gear.

Petter Muren of Norway lectured and flew his new product, the Proxflyer (also the name of his company). This helicopter, which he developed, weighs only 90 grams (3.2 ounces). Probably the most unusual feature is that it doesn't employ servos, gyros, or mixers. It achieves all of its control via three separate electric motors and three speed controllers. While in flight, it appeared to be totally stable, and I am told that it's easy to learn how to fly.

The folks at Hobby People were kind enough to donate a set of their new Cirrus micro RC components that were raffled off during the indoor RC fly-in on Saturday night. They supplied one of their new CS-3 Micro Joule servos, which weighs only 3 grams, a Micro Joule S5A ESC rated at 5 amps continuous and a Micro Joule receiver (above the ESC) that weighs only 2 grams and has auto-shift capabilities. These components will allow the flying of 2- to 3-ounce total weight RC models and should be available in production quantities soon.

This is just a sample of the cool, new and innovative products that were shown at the 2003 NEAT Fair. Be sure to attend in 2004 so you can be the first to see, handle and buy the new products as they are unveiled.

—Bob Aberle

The Fire DragonFly slows down for a low-speed pass down the runway. It's available as an ARF from Morris Hobbies.

This beautiful sailplane spanned over 10 feet and was towed to altitude by Hangar 9's Super Cub.

Continued from page 128

demonstrations, night flying, dinners and seminars took place throughout the weekend. During the demo flights, there was an opportunity to see the diversity and capabilities of electric models—everything from a 10-gram P-38 flying in a 10mph wind to giant-scale warbirds with 80-plus-inch wingspans. The Friday night dinner was a sold-out affair.

On Saturday, CD Tom Hunt was inducted into the AMA Hall of Fame by District II Vice President Dave Mathewsen. He joins a growing list of distinguished modelers.

Many pilots attended the NEAT Fair to find out about the latest in microflight, and they were not disappointed. Some very notable pilots from the world of microflight led many of the well-attended seminars. There was a free flow of information at the event. Many modelers continued to fly long after the sun went down. There was also a night-flying contest that required the completion of certain tasks without the benefit of ground-based lighting. The pilots had a great time.

MOTHER NATURE ENDS THE FAIR

It started to rain on Sunday and by noon, everyone decided to call it a day. Despite the damp weather, the future of electric flight looks very sunny. There are breakthroughs in battery and motor technology happening every day, and that means more power and longer flights for everyone. If you are interested in e-power, make your plans now to attend the 2004 NEAT Fair. For electrics enthusiasts, it's definitely worthwhile.

For information on next year's event, visit www.neatfair.org.

NEAT Fair indoor flying

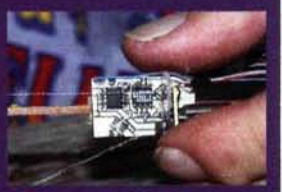
On Saturday evening, the Boston Micronauts Micro/Indoor RC Club hosted an indoor event at nearby Walton (NY) High School. Gordon Johnson did a tremendous job arranging this, and he gave a show-and-tell presentation to the students on micro RC. The club organized the frequency-control and setup time slots to prevent the heavy, fast planes from damaging the light, slow ones. They had one of the best raffle setups I have ever seen. Among the prizes were a Cirrus Micro Joule R/C system, a Widget ARF with RFFS radio from DWE, a new JMP narrow-band aircraft system, a pile of kits, various receivers, actuators and magazine subscriptions.

Art Valland's bipe has a wing area of 5.4 sq. ft. and is powered by a GWS B-2C motor and a 2S 135mAh Li-poly battery.

Henry Pasquet flew his superlight models, including one that literally flies at walking speed; his models are very minimalist to achieve lightness. Nick Leichty flew his micro Ugly Stick, which has a 6-inch span and weighs around 8 grams. It uses a 90mAh E-Tec cell with Nick's radio-control throttle, elevator and ailerons. It zipped around that gym like a pylon racer.

This indoor wonder was designed by Don Srull's grandson on the computer and built by Don.

Bob Selman and Dan and Clarence Hurd flew very nice sport micro models using the RFFS systems and the new JMP receiver as well as many nice models that included some fun sport-profile scale aircraft. The planes would have seemed extraordinary five years ago but are common nowadays because of the widespread use of the various commercial micro units.



A close-up of Dave Burley's 1-gram proportional feedback servo.

Don Srull (left seated) and Dave Burley (right seated) talking about Dave's experimental 1-gram fully proportional feedback servo.

Norway's Petter Muren flew his unique Proxflyer indoor helicopter with a "NEAT 2003" banner.

Matt Keennon with micro NASA flying wing model built by engineers at AeroVironment where he works.

Joe Malinchack was there with his very pretty Citabria and Piper L-4. I didn't see them in flight, but I did admire them displayed on the table. Petter Muren of Norway flew his Proxflyer indoor micro RC helicopter with a banner marked "NEAT 2003." Petter gets the prize for the most unusual flying machine at the indoor meet. His helicopter sports hands-free stability and silent operation using rubber-band belt drives instead of gears.

I flew a few of my micro models, including a 15-inch-span S.E.5 that has machine-gun sounds and lights; this demo gave great pleasure to a couple of kids who were watching. I also flew a mini-scale model of the big NASA flying wing that my coworkers built at Aerovironment.

I had a wonderful time; it was a great occasion for everybody to socialize, compare notes and trade tips. This—for me—is the best part of these events.

—Matt Keennon

We don't need no stinking gas

Today, electric planes have tremendous flying power because of powerful new batteries and stronger motors. Converting a heavier glow-power kit is now easy to do. This was quite evident at the NEAT Fair, where so many scale planes designed for glow power now perform quite well with silent electric motors under the cowl. Impressive performances by such conversions dotted the sky during the noon demonstration and throughout the day.

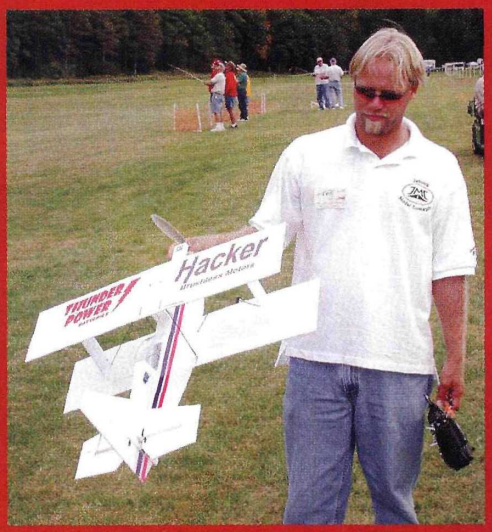
One of the conversions that caught my eye was The World Models' Giant Zero. The plane was designed for a 1.60 to 1.80 glow engine, but Kyle Mashima gave this warbird plenty of e-power to move it quickly through the sky. This 80-inch, 17.5-pound scale beauty is powered by a Hacker C50-Acro 14XL with a 6.7:1 gear controlled by a Hacker Master 77 ESC that swings a 21x14 APC prop. The motor pulls all of its juice from 40 ThunderPower Li-poly cells wired 10S4P (4, 10-cell packs in series then connected in parallel) for a total of 8000mAh; this system draws 62 amps and produces about 2,000 watts of power!

Another nice conversion is the ¼-scale Ike—a Golden-Age racer flown by Dave Grife. He followed plans that were published in *Model Airplane News* in the late '70s, used some of the same construction techniques and made everything ¼ scale. The plans had to be "electrified." This 66-inch racer really moves along using a Hacker B-50 11XL geared at 6.7:1. It is powered by ThunderPower's Li-poly 7800mAh cells pulling 52 amps at full throttle.

Jason Shulman decided to do something that no one else had ever done: he converted his glow-powered Rhapsody pattern plane to electric. Then he competed at the F3A Worlds with the only registered electric plane (there were 97 registered glow-power planes), and he placed first in team and seventh in individual. The Rhapsody has a Hacker C50 F3A 14 XL motor with a 6.7:1 gear drive that turns an APC 22x12E prop that's controlled by a Jeti/Hacker Master 77 ESC. The electricity is stored in a ThunderPower Li-poly battery pack wired 10S3P that produces 6100mAh at 43 volts.

Now that we have so much power coming from electric systems, I'm sure we will see many more glow-powered conversions at next year's NEAT Fair.

Small package, lots of power



Just back from the F3A World Championships, Jason Shulman holds the new Hacker USA Ultimate Bipe kit offering. This highly maneuverable biplane has 420 square inches of wing area and a 30-inch span, and it employs a Hacker B-20-26S 4:1 brushless motor with a Hacker Mas 18-3P ESC. The battery pack is a ThunderPower Li-poly 3S 1320mAh. Total model weight is just 11.5 ounces. The Li-poly cells provide a solid 10 minutes-plus of vertical performance.

Matt Keennon's tiny P-38 shows the other end of the weight spectrum yet still retains all the advantages of Li-poly batteries. His P-38 has a wingspan of only 10.5 inches. Total weight is 35 grams (1.23 ounces) with two M-20 electric motors and 2 Kokam 145mAh Li-poly cells in series.

Dave Grife of Coldwater, MI, flies this ¼-scale "Ike" with 7800mAh Thunder Power Li-poly packs. The 8-pound model is powered by a Hacker B-5011XL with a 5.2:1 planetary gear drive.

Last year, lithium-polymer batteries were the primary subjects of interest, as might be expected. There has been a lot of progress in Li-poly development since then—their first full year of use. Now we are seeing the benefits of design, testing and experience. Li-poly batteries are coming down in price, are easier to charge and are pumping out more power that ever before. It is interesting to note that lithium power applications ranged from some of the smallest planes (1-ounce indoor RC models) to large, ¼-scale, giant aircraft. The biggest advantage lithium polymers offer is that they're smaller and lighter and have considerably higher capacity ratings. These advantages allow the production of lighter models that are capable of much longer flight times.

—Bob Aberle

HOBBICO NexSTAR Select

by Rick Bell

The ultimate RC flight trainer!

The folks at Hobbico are convinced that the NexSTAR Select will transform the way new RC'ers learn to fly. "How?" you ask, "when there are many almost-ready-to-fly [ARF] trainers on the market today?" Well, a few of these have the radio system and engine installed to get you into the air quickly. But how many ARF trainers have an "Active Flight Stabilization" system that helps new pilots keep the model straight and level? And how about an engine that has been broken in at the factory and has a mount that absorbs vibration to protect the airframe and radio components and so ensure a long life?... and aerodynamic enhancements designed by NASA to prevent the wing from stalling and spinning at low speeds (for example, on landing approaches)? This trainer even has speed brakes that allow the model to fly more slowly!

Hobbico guarantees flight success with its NexSTAR Select, so we decided to put it to the test by using it to teach one of Air Age Media's *RC Car Action* magazine's associate editors to fly. Although Paul Onorato has a lot of RC car experience, he had never even touched an RC plane, so he was perfect for our purpose. Paul is typical of many RC'ers who want to try an RC airplane. To see whether the NexSTAR would really live up to its manufacturer's claims, we had Paul assemble and set up the model without any help.


WORLD EXCLUSIVE!

SPECIFICATIONS

MODEL: NexSTAR Select

MANUFACTURER: Hobbico

DISTRIBUTOR: Great Planes Model Distributors Inc.

TYPE: ARF trainer

LENGTH: 56 in.

WINGSPAN: 68¾ in.

WING AREA: 722 sq. in.

WEIGHT: 6.5 lb.

WING LOADING: 21 oz./sq. ft.

ENGINE INSTALLED: O.S. MAX .46 FXi 2-stroke

PROP SUPPLIED: nylon NexSTAR 11x5

RADIO SYSTEM INSTALLED: Futaba Skysport 4YBF FM 4-channel w/4 3003 servos and built-in Active Flight Stabilization system

FUEL USED: Wildcat 15% nitro

PRICE: $399.99

FEATURES: all-wood construction; 20-minute assembly; installed engine and radio system; SnapGear main landing gear; factory-tuned engine; IsoSmooth Engine Mount; PivotFlex wing mount; three-line fuel system; SpeedBrake Training Flaps; SpinControl Airfoil Extensions; Easy Align Tail Mounting; Active Flight Stabilization; instructional video; comprehensive manual; NexSTAR Edition of *RealFlight* flight sim.

COMMENTS: this is the most inclusive RC training package ever offered. Every effort has been made to guarantee fledgling pilots' success. Assembly takes minutes; in fact, it takes longer to read the manual than to build the model. The Active Flight Stabilization system really works; whenever I flew the NexSTAR at unusual attitudes, the AFS righted it and brought it back to a steady course. The included flight simulator is a big hit with me; it's the first kit to include a flight simulator of the trainer you're about to fly.

GROUNDBREAKING INNOVATIONS

The NexSTAR has many advanced features that have never before been included in any model trainer. Here's a quick rundown of them:

• **CenterCore Main Wing Rib.** The wing has a CenterCore Main Wing Rib that aligns and joins the wing halves and also holds the aileron servo. Most trainers use rubber bands to attach the wing to the fuselage, but not the NexSTAR; it has the unique PivotFlex mount. This mount attaches the wing securely with just one nylon bolt, and it cushions the wing against the impact of minor jolts (which beginners usually experience). In more serious mishaps, the bolt will break and allow the wing to pop off and escape major damage.

• **SpeedBrake Training Flaps/ SpinControl Airfoil Extensions.** The wing also has two aerodynamic features never before offered on a trainer. As its name implies, the SpeedBrakes slow the plane down for easier control, especially during landings. The SpinControl Airfoil Extensions are droops developed by NASA, and they're attached to the wing's outboard leading edge. They allow the NexSTAR to fly at extremely slow speeds and at high angles of attack, both of which usually result in an unexpected spin. When you've learned to fly, the Speed-Brakes and SpinControl Extensions can be removed to allow faster flight speeds and aerobatics.

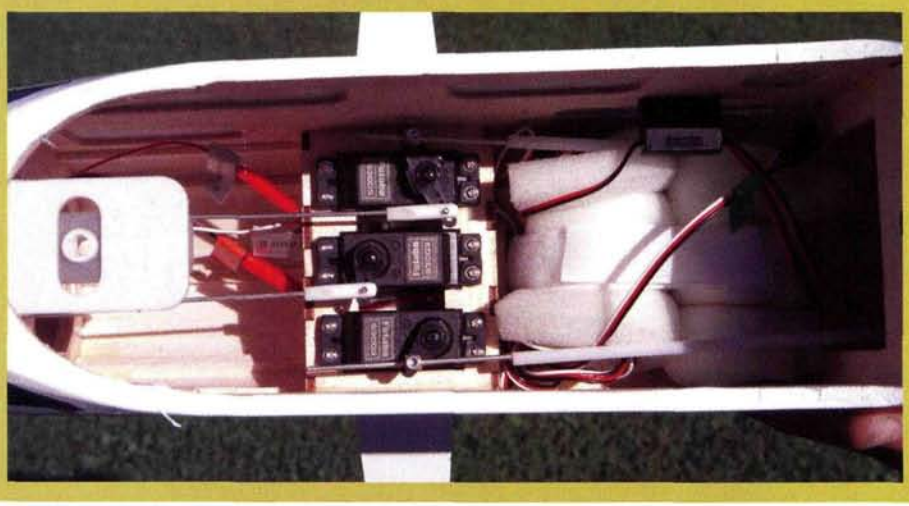
• **SnapGear Landing Gear Mount.** This is also special because it "snaps" into a nylon mount—a process that takes about three seconds. The landing gear is made of extra-thick Duraluminum to absorb the shock of those less-than-perfect landings.

• **Easy Align Tail Mounting.** On a lot of models, installing the tail requires a certain amount of finesse. Thanks to the NexSTAR's innovative tail-mounting arrangement, you don't need any tools to install it. Just screw in two nylon bolts from the bottom of the fuselage, and the vertical fin and horizontal stabilizer are securely held in place and aligned.

• **IsoSmooth Engine Mount.** All model planes suffer from damaging vibration.

IT'S ALL ABOUT CONTROL

A trainer package wouldn't be complete without a high-quality radio, and the NexSTAR Select comes with one from the best in the business—Futaba. The Skysport 4YBF is the newest in Futaba's popular Skysport series. This FM 4-channel system comes with rechargeable Ni-Cds for the receiver and transmitter, and it offers servo-reversing on all 4 channels. The servos are Futaba's S3003 standard servos, but what sets this system apart is that the receiver has the AFS built into it. This means that you don't need a separate module for the servos to be plugged into; all the servo connections are made in the receiver. The AFS system's gain control and reversing switches are also built in and easy to use—very nice, Futaba!

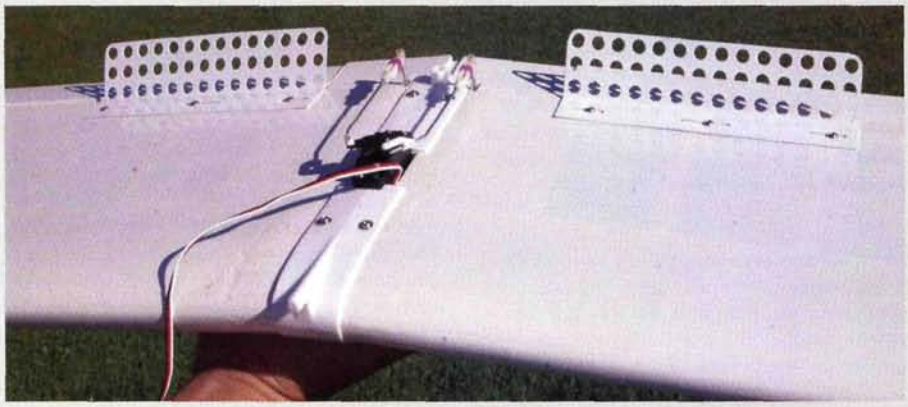


HIGH-TECH AERODYNAMICS

The wing is where most of the obvious new features are. On the leading edge, out toward the wingtips, are the NASA-designed SpinControl Airfoil Extensions—droops that were developed to prevent full-scale airplanes from stalling and spinning, and that's exactly what they do on the NexSTAR. They allow the model to be flown very slowly and at high angles of attack without stalling and spinning out of control.

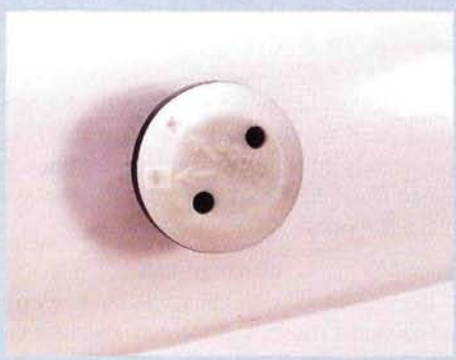
The aerodynamic SpeedBrake Training Flaps allow the NexSTAR to fly more slowly and reduce its top speed to make it easier to control. They also shorten its landing approach. As you can see, both enhancements work together to make for a super-stable aircraft. As your flying skill increases, you can remove the droops and the speed brakes to allow the NexSTAR to fly faster and perform aerobatic maneuvers.

After learning to fly it, those who are more daring and want to expand the NexSTAR's flight envelope can follow the instructions and install dual aileron servos; for really quick takeoffs and steep, slow landings, they can even add wing flaps.



ADVANCED ELECTRONICS

The key to the success of the NexSTAR Select as a trainer is its Active Flight Stabilization (AFS) system. When you release the transmitter sticks, the AFS automatically levels the model in both pitch and roll, yet it allows you control whenever you move the transmitter sticks. The AFS has a sensor that's mounted on the fuselage underside, and it works by sensing differences in light around the model to know its attitude. Keep in mind, though, that AFS is not an autopilot; it's just a useful tool that will return the model to straight and level flight when you overcontrol it. As your learning progresses, the AFS can be desensitized to allow you more control.



For the AFS to function properly, you must follow these simple guidelines:

- Before you fly, make sure that the sun is at least 25 degrees above the horizon.
- Do not fly over reflective surfaces such as snow or water.
- It's OK to fly on partially cloudy and overcast days.
- On bright, sunny days, the AFS will tend to fly the model toward the sun, so be prepared for that.

Hobbico addresses this with its unique IsoSmooth Engine Mount. It helps to prevent vibration from damaging the radio components and airframe.

• **O.S. MAX .46 FXi engine.** The included engine is a newly developed O.S. MAX .46 FXi that has been optimized for easy starting yet still delivers peak rpm for great performance.

• **Automatic Flight Stabilization (AFS) system.** The Futaba 4YBF radio system is completely installed, but by far one of the NexSTAR's most innovative features is the radio's AFS system. This makes the NexSTAR the ultimate trainer. The AFS will return the model to straight and level flight if you lose control. Simply let go of the control sticks, and the AFS will take over. It is not an autopilot, so you still need to guide the NexSTAR around your flying field.

• **Instructional video/NexSTAR Edition of the *RealFlight* flight simulator.** These features make this aircraft a complete training package.

ASSEMBLY

There isn't much to say here, as making the NexSTAR flight-ready is super-easy and consists of four simple steps: join the wing halves; attach the SpeedBrakes to the wing; install the SnapLock landing gear; assemble the tail surfaces. Then mount the wing on the fuselage at the flying field. Paul assembled the NexSTAR in less than 20 minutes—pretty impressive, considering that he had never assembled an ARF aircraft model.

Rechargeable Ni-Cd batteries in the fuselage and the transmitter power the radio system. Before you attempt to fly the NexSTAR, charge the batteries overnight with the supplied charger. You can do this before or after you assemble the model. While the batteries are charging, why not install and use the NexSTAR Edition of *RealFlight* and do more building—of your flight skills. Training on a flight simulator allows you to build your skills without risking your model. You can practice takeoffs and landings, turns to the left and right and figure-8s. You'll really benefit from two or three hours of simulation practice before you head to the field to fly for real. Although flight sims are wonderful training tools, they aren't replacements for a skilled RC flight instructor. You can find an instructor through your local hobby shop or RC club or the Academy of Model Aeronautics.

FLIGHT PERFORMANCE

Hobbico advertises that the O.S. engine installed in the NexSTAR has been bench-run and adjusted at the factory. I wondered whether the SpeedBrakes and the SpinControl airfoil extensions would work. Our test model would answer these questions, and we were eager to find out.

TAKEOFF AND LANDING

With the required preflight checks completed, I fueled up the NexSTAR and we were ready for action. I choked the engine and lit the glow plug and the engine fired right up. The high-speed needle needed a few clicks of adjustment, as the engine was a little on the rich side. This was to be expected, as our weather in Connecticut is different from where the engine was first run.

For the first flight, I adjusted the AFS to zero gain. I wanted to be able to trim the model without any interference from the AFS system and to see how the wing devices would function. I taxied the model to the end of the runway and smoothly applied the throttle. In 25 to 30 feet, the NexSTAR was airborne and climbing at a steep angle. I throttled back to about ½ to arrest the climb, and the NexSTAR leveled off. My first impression was that the O.S. MAX .46FXi was very powerful—more than the NexSTAR needed. The model needed only a couple of clicks of elevator and rudder trim to achieve straight and level flight.

Landing the NexSTAR is almost automatic. It slows down quite a bit, remains very solid and, more important, stable; there were no signs of a stall or wanting to fall off the wing during landing approaches. I made quite a few landings at different speeds and angles, and the NexSTAR was easy to handle. It was evident that the leading-edge droops and speed brakes did their jobs.

LOW-SPEED PERFORMANCE

This is one area where a lot of new pilots spend most of their time when they're learning to fly, and the NexSTAR is well equipped to handle the task. It's incredibly stable and remains responsive to control inputs at slow speeds. I put the SpinControl extensions to the test and tried to stall the model at a variety of speeds. Though any aircraft will stall eventually, the NexSTAR is as close to being stall-proof as you can get. When I tried to make it stall, it just slowed to a ridiculously low speed, gently wagged its wings and, after a while, slowly dropped its nose. Applying power quickly has it flying again.

HIGH-SPEED PERFORMANCE

With the O.S. MAX .46 FXi, the NexSTAR really moves out and consumes the sky very quickly—not what you'd expect of a trainer with speed brakes. At high throttle settings and speeds (with the AFS deactivated), the NexSTAR, with its flat-bottom wing, tends to climb. This trait is typical of flat-bottom airfoils, and it can be trimmed out with down-elevator trim. Nevertheless, the NexSTAR handles very well at high speeds; it's responsive but not twitchy.

AEROBATICS

A big surprise was how well the NexSTAR does basic aerobatics, even with the leading-edge droops and speed brakes attached. I flew loops, rolls, barrel rolls, point rolls, Cuban-8s, reverse Cuban-8s, stall turns and even limited inverted flight. Remove the droops and speed brakes, and you have a potent platform to learn aerobatics with.

FLYING WITH THE AFS SYSTEM

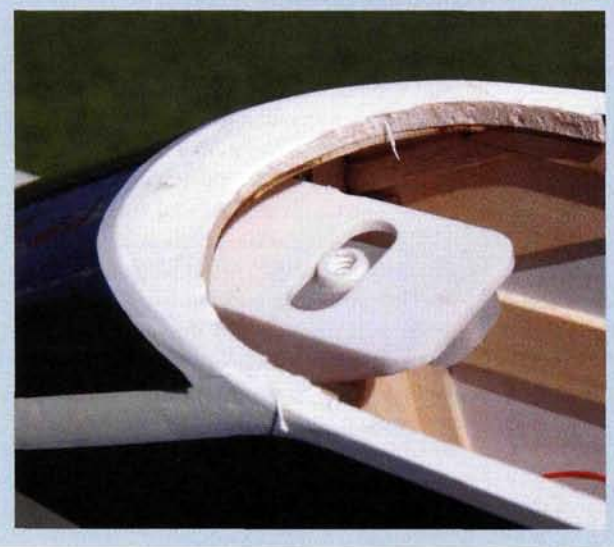
The big question is, how does the NexSTAR perform with the Active Flight Stabilization (AFS) system? If you're an experienced RC pilot, you'll at first find the AFS unnerving, as it fights every single control input you make, and the higher the gain (sensitivity), the more it fights to keep the plane in level flight. Now, you might think this is less than ideal, but when you're accustomed to it, you'll ignore the AFS.

The AFS is a great feature for absolute novices. I solicited the help of just such a person (see Paul Onorato's sidebar, "A Beginner's Perspective"). Here are my observations after flying the NexSTAR with the AFS.

Forget about trimming the model for level flight; the AFS does that for you, so an out-of-trim model really isn't an issue. Start with the gain at around 50 percent, and fly a tank or two to get used to the AFS. At times, it will feel as if you've lost control and the plane has a mind of its own. To overcome this, you need to over-control the model; remember that the AFS will try to counter your control inputs and keep the model flying straight and level. I put the NexSTAR into several very compromising situations and released the sticks to see what would happen. The AFS worked flawlessly every time and returned the NexSTAR to level flight after a few seconds. I also tried loops and rolls, figuring that the AFS wouldn't recognize them as controlled maneuvers. I was right: the AFS tried to stop the maneuvers and return the model to level flight.

The AFS does have a minor quirk: if you fly on a bright, sunny day, it will slowly steer the model toward the sun—not a big deal, just something to be aware of. The AFS system is quite impressive, and I can see why Hobbico guarantees that beginners will succeed with the NexSTAR Select.

DAMAGE CONTROL



The wing has a unique mounting system that's dubbed the "PivotFlex Wing Mount." It comprises a tough, molded-nylon center rib on the wing and a flexible mount in the fuselage. Most trainers use rubber bands or nylon bolts to attach the wing to the fuselage; rubber bands allow the wing to come off in a crash and avoid being damaged, while nylon bolts attach the wing very rigidly. The PivotFlex system is unique in that it provides the same solid mounting as nylon bolts, yet it allows the wing to absorb minor impacts or to come completely off the fuselage to reduce the chance of its being damaged.

PREFLIGHT SETUP

Your NexSTAR has to be properly set up, and this is where the instructional video comes into play. It shows you how the controls work in relation to the transmitter-stick movements and how to balance the NexSTAR to obtain the proper center of gravity. It also goes through a 10-point checklist that you should run through before every flying session. Our determined student, Paul, watched the video and followed the instructions in the manual, and he was able to set up the plane correctly in about 20 minutes. When he had finished, I took a few minutes to verify his work; it was spot on.

CONCLUSION

Does Hobbico's NexSTAR Select live up to the claim that it's absolutely the best way to learn to fly? The answer is a resounding

Continued on page 150

VIRTUAL FLIGHT TRAINING

One of the highlights of this trainer package is the NexSTAR Edition of the *RealFlight* flight simulator on a CD-ROM and a special interface cable. After you've loaded the program, plug the interface cable into a USB port and connect it to the Futaba transmitter that's used to fly the model.

This special edition of *RealFlight* is pretty neat. If you've never flown an RC model, you'll find that a couple of hours with this flight simulator before you head to the flying field with your instructor will be very beneficial. The simulator allows you to get a feel for takeoffs, landings and left and right turns without any risk of damaging the model.

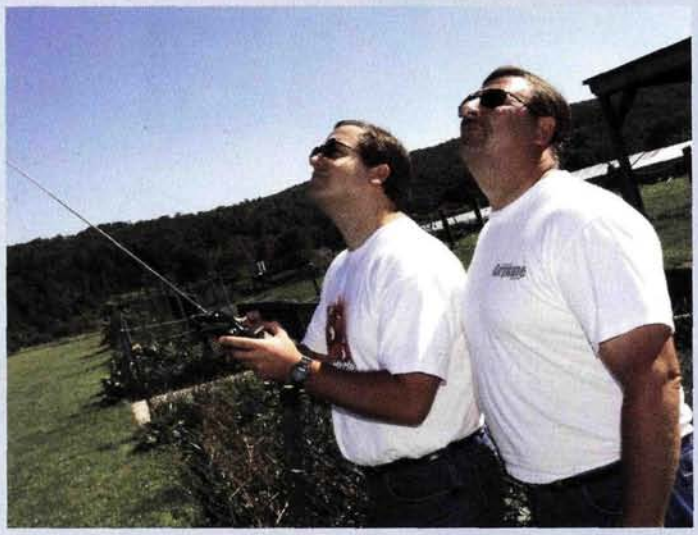
Though the NexSTAR *RealFlight* is not a full-blown version of that flight sim, it uses the same graphics and physics, and it works in the same way: drop-down menu boxes allow access to the sim's features. Rainbow Canyon is the only airport available and, quite frankly, it's the only one you'll need. You can customize the surrounding area by adding or removing objects such as trees and houses and a bunch of other stuff. You can also adjust the wind speed and its direction and practice flying in less than perfect conditions.

Because the NexSTAR flight sim is designed for this trainer, the only aircraft available is, of course, the NexSTAR. Just like the model, the flight sim has the unique Active Flight Stabilization system. To access this, scroll to the "Aircraft" drop-down menu, and simply click to activate "Pilot Assist." You can adjust the AFS's sensitivity just as you can adjust the AFS in the model. I enjoyed using the flight sim's AFS. I could put the model into just about any position and let go of the transmitter sticks, and the aircraft always returned to straight and level flight. After logging some time on the flight sim using Pilot Assist and then flying the NexSTAR, I can attest that the sim comes very close to the NexSTAR's flight parameters. When I placed the real model in an awkward position and released the sticks, the AFS righted it—just too cool!

I also appreciated the sim's Virtual Flight Instructor. Using this is just like having an instructor by your side. When I teach a novice, I demonstrate a maneuver and explain the steps I take as I fly the maneuver. Well, the virtual flight instructor does exactly the same thing as it flies the maneuver onscreen. There's even a transmitter on the screen, and its sticks move in concert with the model. This visible reference point gives budding pilots an idea of how the model reacts to stick inputs. The virtual flight instructor shows you how to do 180- and 360-degree turns, figure-8s, straight-and-level flight, takeoffs, taxi practice and touch-and-go's—all essential maneuvers for successful flight.

Before flying the NexSTAR, I spent about an hour with the flight sim getting familiar with its flight characteristics because I wanted to be able to compare the flight sim to the model. The similarity was truly amazing! Just a few seconds after flying the NexSTAR for the first time, I felt as if I had flown it many times. I immediately felt comfortable flying it, so I strongly recommend that you build up flight time on the flight simulator before you fly the model. The value of a model-specific flight simulator is, well, priceless!

A BEGINNER'S PERSPECTIVE



When I was given the opportunity to fly the new NexSTAR Select, I was a little hesitant until I learned about the special built-in features that make it easier for first-time pilots to fly. Then, I couldn't wait to give it a try! With Rick Bell as my flight instructor, I headed to the local flying field. As Rick readied the plane for airtime, he gave me some last-minute instructions on the NexSTAR's controls. I was impressed by how easy it was to assemble the airplane and get it ready for flight. The O.S. engine started easily, and Rick soon had the plane up in the air. When it was high enough to give him time to grab the transmitter from me if I got into trouble, he handed the controls to me.

My first assignment was to fly a giant oval. With the plane in level flight, I moved the stick to the left and pulled back slightly to prevent the plane from losing altitude. It banked and made a gradual turn. On the next left-hand turn, I gave it too much left input and not enough elevator, and it lost altitude. I tried to fix the mistake but only made things worse by over-correcting. Rick calmly told me to let go of the sticks; I did, and the Active Flight Stabilization (AFS) feature took over and put the plane back into level flight. I was amazed! Knowing how well the AFS functioned increased my confidence and helped me not to worry about crashing. Soon, I was at ease, and I flew the plane until Rick had to pry the radio out of my hands. *—Paul Onorato*

"Yes!" This RC training package is so well thought out that Hobbico guarantees you'll learn to fly with the NexSTAR Select. I mean, how can it fail? With its easy assembly, aerodynamic enhancements, factory-tuned engine, Active Flight Stabilization system, high-quality Futaba radio, comprehensive instruction manual and video and the awesome NexSTAR Edition of *RealFlight*, it can't fail—as Paul proved.

> ...Hobbico guarantees you'll learn to fly with the NexSTAR Select.

What's more, the NexSTAR looks just super, as it doesn't have that boxy trainer shape. Instead, its fuselage is rounded and gracefully tapered—much like a Cessna's.

Dollar for dollar, the Hobbico NexSTAR Select is an outstanding value for enthusiasts who are looking for the best way to get into RC flying. Check one out, and you'll see what I mean.

Hobbico; *distributed by Great Planes Model Distributors; (217) 398-6300; (800) 682-8948 hobbico.com.*

Wildcat Fuels *(859) 885-5619; orders only (888) 815-7575; wildcatfuel.com.*

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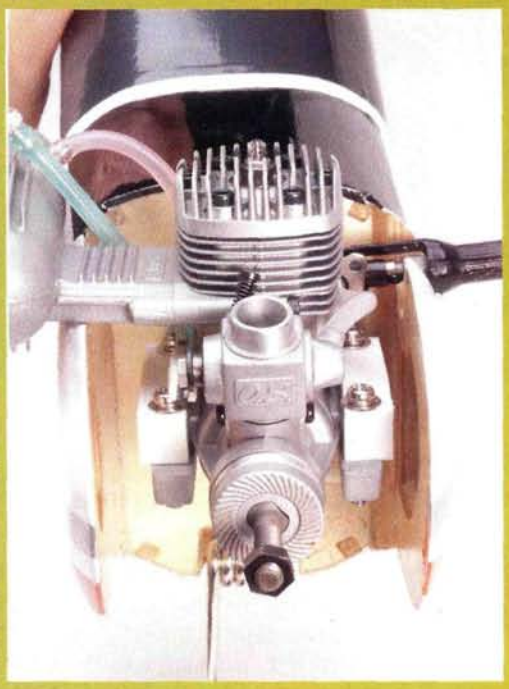
USER-FRIENDLY POWER SYSTEM

Many beginners have trouble running a new engine. To remedy this, Hobbico has broken in the NexSTAR's engine and tuned it so that it's truly ready to fly. The needle valve is adjusted at the factory and a high-speed extender/limiter ensures that it can't be adjusted out of its optimum operating range. To make fueling and defueling easy, there's a three-line, color-coded system, and you never have to disconnect any fuel lines—pretty simple.

The NexSTAR's O.S. MAX .46 FXi engine is a new version of the popular O.S. MAX .46 FX. It features a new head design that delivers more power—power that's very evident when you fly the model.

To protect the other components against vibration, the engine is mounted in Hobbico's new IsoSmooth Engine Mount. The engine-mounting lugs are surrounded by hard rubber boots that are screwed to the aluminum mount to isolate the engine from the rest of the model. The Iso system does work; when the engine is running, its sound is muted and the airframe is very smooth.



Every modeler knows that the P-51 Mustang is probably the most exciting U.S. fighter of the WW II era. And there's plenty more to get excited about with this latest release, a 1.50-size P-51 Mustang ARF from Hangar 9! When I reviewed Hangar 9's 60-size Mustang in the April 2003 issue, I raved about its great flying qualities. Therefore, I had great expectations of this new larger model. This larger version retains the retracts, as in the 60-size, but it uses a separate servo for each gear and adds flaps! Also, the elevator and rudder servos are in the fuselage rather than in the tail. Other subtle differences include an airfoil-shaped stab and fin and a tailwheel in the correct scale location, all of which give a more authentic scale appearance. All of this adds up to one impressive model, and I couldn't wait to get it into the air.

This model is very complete. It lacked only the radio, engine, scale pilot, spinner, canopy glue and CA. A universal aluminum engine mount is included, but my chosen engine, the Saito 200Ti, comes with its own custom mount.

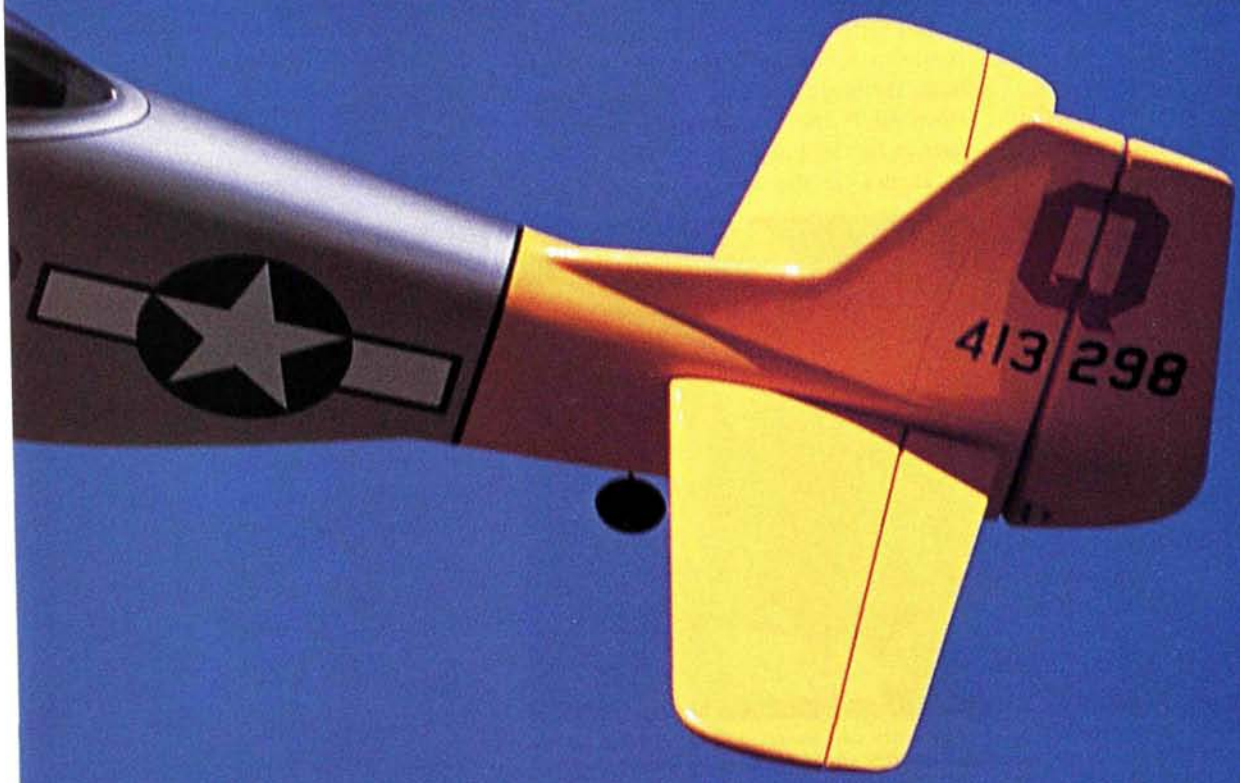
Like the 60-size Mustang's, the instruction manual is very detailed and easy to follow and has many photos. It assumes little previous ARF experience, but there are a few specific areas of the assembly that I feel hold special interest.

HANGAR 9

P-51 MUSTANG 1.50 ARF

by Bill Jensen

Supersizing a sensational scale warbird



SPECIFICATIONS

MODEL: P-51 Mustang 1.50 ARF

TYPE: sport-scale fighter

MANUFACTURER: Hangar 9

DISTRIBUTOR: Horizon Hobby Inc.

WINGSPAN: 77 in.

LENGTH: 68 in.

WING AREA: 1,039 sq. in.

WEIGHT: 14.3 lb.

WING LOADING: 31.7 oz./sq. ft.

RADIO REQ'D: 6- to 10-channel with 10 servos: aileron (2), elevator (2), rudder, throttle, retracts (2), flaps (2)

RADIO USED: JR 10X

ENGINE REQ'D: 1.20 to 1.50ci (2-stroke), 1.50 to 2ci (4-stroke)

ENGINE USED: Saito FA-200Ti, in-line twin, 4-stroke, 2ci

PROP USED: APC 16x8

FUEL USED: 15% nitro, 20% all-synthetic oil

PRICE: $499.99

FEATURES: light, built-up, Ultracote-covered, balsa and lite-ply construction; painted fiberglass cowl and canopy; photo-illustrated assembly manual; complete hardware package; installed radio tray.

COMMENTS: the Hangar 9 P-51 1.50-size ARF provides an easy way to break into sport-scale warbird flight with retracts and flaps! Quality and workmanship are very good; I like that the prebuilt and covered airframe saves time but still leaves important detailing and customization to the builder. The Ultracote is expertly applied and easily repaired. With the Saito FA-200Ti, it offers a wide flight-performance envelope, and this ARF has to be one of the best values!

HITS

- Good stability and gentle stall.
- Retracts and flaps come installed.
- Painted cowl and canopy.
- Ultracote covering.
- Scale details.
- Airfoil-shaped stab and fin.

MISSES

Soft main-gear struts.

Difficult to fully conceal the Saito FA-200Ti.

ENGINE INSTALLATION

The firewall and the nose ring have the correct built-in right thrust and downthrust offsets for the Saito 200, so I needed only to get the spinner to have a constant 1/16- to 1/8-inch gap to the nose ring.

I went a step further with my installation; a major feature of the Saito twin is a small frontal area that allows it to fit better within cowls of aircraft with in-line engines. It would be a shame to have this engine protrude from the cowl on a P-51 Mustang model, right? Right! After a bit of experimentation, I found that when I rotated the engine on the firewall (which required a cutout in the inner plywood frame for mount clearance and the removal of about 0.090 inch from two of the valve covers), it was possible to avoid the necessity of a cutout for the valve covers on one of the cylinders. I admit that this took some extra time and effort, but the aesthetic improvement was worth it for me.

Note the cooling baffles required to route cool air to the rear cylinder on the Saito 200Ti twin. For the exhaust, Saito flex pipes can be completely concealed under the stock cowl.

I would have liked a slightly fuller cowl at the "chin" area to make it easier to conceal the Saito. A slightly larger cooling air-intake scoop would be nice, too, and it wouldn't detract from its scale appearance in my opinion.

The Saito 200 twin's manual calls for a baffle in a cowled application to allow more cooling airflow to the rear cylinder. However, it does not provide a diagram of such a baffle, but I figured that if it's a good idea for the rear cylinder, it's good for the front one also! I fashioned a 1/16-inch lite-ply plate on each side and glued them to the existing nose structure with 1/4-inch balsa triangle stock for support. I applied two coats of Sig clear dope for fuelproofing. These baffles are simply flat plates that help direct airflow within the cowl to travel close to the cylinders and through the engine's cooling fins as it moves aft toward the air exit. You can see my interpretation of this requirement in the photo.

For the exhaust, I used the optional Saito flex pipes, available from Horizon, because they can be totally concealed. I installed a McDaniel twin-type remote glow driver with its own Ni-Cd, a Tru-Turn 5-inch P-51 aluminum spinner and Aerotrend Fireline colored fuel lines to identify the carb, muffler and crankcase vent lines.

FLIGHT PERFORMANCE

TAKEOFF AND LANDING

My first flight was at a local grass-strip private airport. Although there was also a paved runway available, I wanted to operate the P-51 off grass. Some tail-draggers tend to nose over when they taxi, take off and land on grass. The Mustang had no such problems, so the gear placement relative to the CG seems to be just right.

On the first takeoff, I selected no flaps, and I wasn't sure what to expect, so I unleashed the horses slowly at first. Then, as the speed built up, I went full tilt; the 4-stroke bark was reassuring! Slight right rudder kept it straight. Neutral elevator let the tail come up within a couple of seconds, while a slight up-input produced a nice, fast 30-degree climb-out—just like the full-size Mustang!

For the first landing, I selected half flaps. I lowered the gear and made an upwind pass at reduced power to visually confirm "both down." The approach and flair to a main-gear "wheel" landing and the rollout to a full stop felt completely natural without any surprises.

LOW-SPEED PERFORMANCE

I had set up the flap throws per the manual at 15 and 38 degrees. In flight, at about ⅓ throttle, both flap deployment settings produced little pitch change, so flap-to-elevator mixing is optional. This ship slows down nicely, and at the stall break, one wing dropped slightly (as you would expect), but ailerons and rudder remained effective—release of up-elevator gave an instant recovery.

HIGH-SPEED PERFORMANCE

With the Saito twin set about 400rpm rich, the ship had good level speed and vertical performance for a scale fighter. Tracking through climbs, descents and turns was superb. I didn't experience any high-speed stalls while it maneuvered or performed aerobatics at full power.

AEROBATICS

Large aerobatic maneuvers are natural for a fighter—especially victory rolls! These are a pleasure to perform with this bird's solid grooving flight. This ship is docile on low rates and radical on high. Inside and outside snaps are crisp on high rates, and inverted is as stable as upright. Level knife-edge passes were easy, too. Needless to say, 3D-type maneuvers are not appropriate for this ship!

GENERAL IMPRESSION

This is an all-around good-flying aircraft that hasn't any bad habits. It's rock-steady, smooth and easy at all speeds on low rates, and it lights up on high rates to briskly perform all conventional aerobatics—assuming it's in experienced hands, of course.

I used three Robart incidence meters to check the wing incidence tip-to-tip. It was perfect!

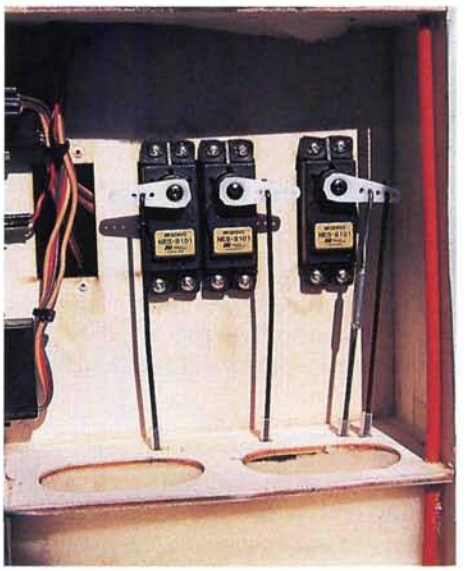
RADIO INSTALLATION

As with the 60-size Mustang, much of the work is already done! The aileron servos are mounted to blocks that are glued to the wing hatches. You just drop the elevator, rudder and throttle servos into their trays. The weight of the engine that you use will determine where the batteries should be located to achieve the specified balance point. In my model, the receiver, glow driver and battery for the retracts went in front of the servos, while the receiver and glow batteries were placed aft. These items were secured with foam padding. I routed the receiver antenna through a nylon pushrod outer tube, which I placed inside the fuselage for concealment and positioned as far from the other control-system components as possible.

Plastic pushrod tubes for the fuselage controls come installed. Hardened-steel pushrods are slid into the tubes to connect the servos to the control surfaces. I had never seen this setup before, and at first, I was skeptical that it could give slop-free control. After it had been hooked up to the servos and control horns, there was virtually no play, and I was impressed!

This plane uses 10 (!) servos. Follow your radio's manual for installation and setup specifics. The plane requires at minimum a basic 6-channel; however, an 8- to 10-channel programmable makes it more fun. This was my first setup of a complex airplane with the JR 10X outfit, and I found it very rewarding. This high-end radio provides numerous setup options and is a natural for this model! I used only one Y-harness (retracts). Every output socket was filled on the 10-channel receiver; almost every servo had its own channel, and there were also channels for

...it's a Mustang fighter with hot performance like its full-size predecessor...



The Mustang uses a total of 10 servos, and unlike the 60-size version, the 1.50 has the rudder servo and the two elevator servos mounted in the fuselage.

The Mustang comes with retracts installed but the strut material is kind of soft. To avoid a stalled servo (caused by bent gear) resulting in radio problems, a separate battery pack was used to power the retracts.

the transmitter-adjustable onboard glow igniter, retracts and 3-position flaps!

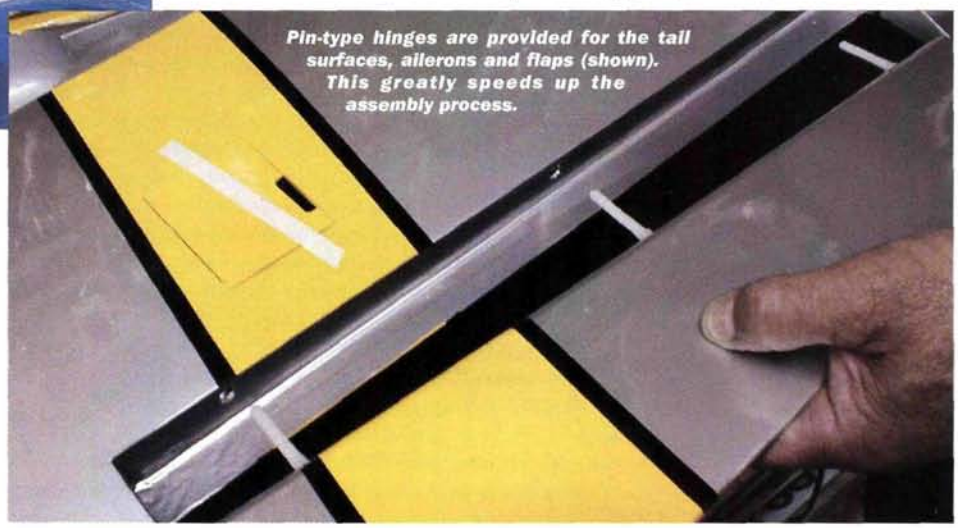
RETRACTS

I used the recommended JR low-profile retract servos (no. JRPS703), which fit perfectly in the wing-servo bays. I made sure that there wasn't any binding in the retract linkage. Although this takes a few extra minutes, it really helps improve the plane's reliability.

I was disappointed with the softness of the gear-strut material, and I plan to replace them with harder, stronger units. Because the struts deform easily during normal ground handling, they often hang up on the wheel wells during actuation. This is always a possibility with any retract, so I used a separate battery pack to power them in case a gear is fouled and a servo stalls.

WING

The wing-center joint is formed by a connecting spar and was glued with 30-minute epoxy. Because I was using the largest 4-stroke engine in the recommended range, I decided that glassing the joint would be good insurance. This is common practice on many kits and ARFs in this class. The Ultracote must be removed so the resin will adhere to the wood. It is critical that you don't score the wing sheeting below the covering, so I didn't cut through the covering by using the blade vertical to the balsa sheeting. Rather, I peeled the covering back and cut it with scissors. I used medium-weight fiberglass cloth (2½ ounces per square foot) cut about 5 inches wide, and Bob Smith's Finish-Cure 20-minute epoxy resin. Blot up the excess resin with a roll of toilet tissue (this may sound strange if you haven't tried it, but it gives a light, smooth finish that is ready for Ultracote after it cures; you'll never go back to the old way!). The Ultracote matches exactly, and the finished job looks great!



Pin-type hinges are provided for the tail surfaces, ailerons and flaps (shown). This greatly speeds up the assembly process.

Since I had all the materials on hand, I also fiberglassed the firewall-to-fuselage joint on the inside and outside for extra strength and resin-sealed the wood in the tank compartment with the glassing resin at the same time.

FINAL DETAILS

I used soapy water to apply the few decals that weren't already in place. I painted and installed a Hangar 9, 1/6-scale WW II pilot figure and secured the scale exhaust stacks and the painted canopy with canopy glue. I performed the final CG check, balanced the prop and spinner and ran the engine in the plane to make the final needle settings.

CONCLUSION

This bird gives you a lot for the money: a beautiful, light, straight and covered airframe that's ready for your radio and engine installations. In the air, it's a Mustang fighter with hot performance like its full-size predecessor; plus it offers aerobatics, retracts and flaps! That's a lot to like, and it's ready in days or weeks, not in months or years. So grab one, and let's go flyin'! ✈

***Aerotrend Products** (203) 734-0600; aerotrend.com.*

***APC Props;** distributed by Landing Products (530) 661-0399; apcprop.com.*

***Bob Smith Industries,** (805) 466-1717; bsiadhesives.com.*

***Hangar 9;** distributed by Horizon Hobby Inc.*

***Horizon Hobby Inc.** (800) 338-4639; horizonhobby.com.*

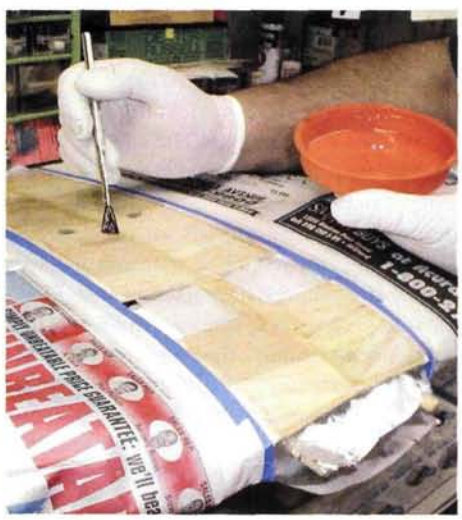
***JR;** distributed by Horizon Hobby Inc.*

McDaniel R/C Inc. (573) 782-6689; (573) 782-6691.

***Saito;** distributed by Horizon Hobby Inc.*

***Sig Mfg. Co. Inc.** (800) 247-5008; (641) 623-5154; sigmfg.com.*

***Tru-Turn Precision Model Products;** distributed by Romco Mfg. (713) 943-1867; tru-turn.com.*



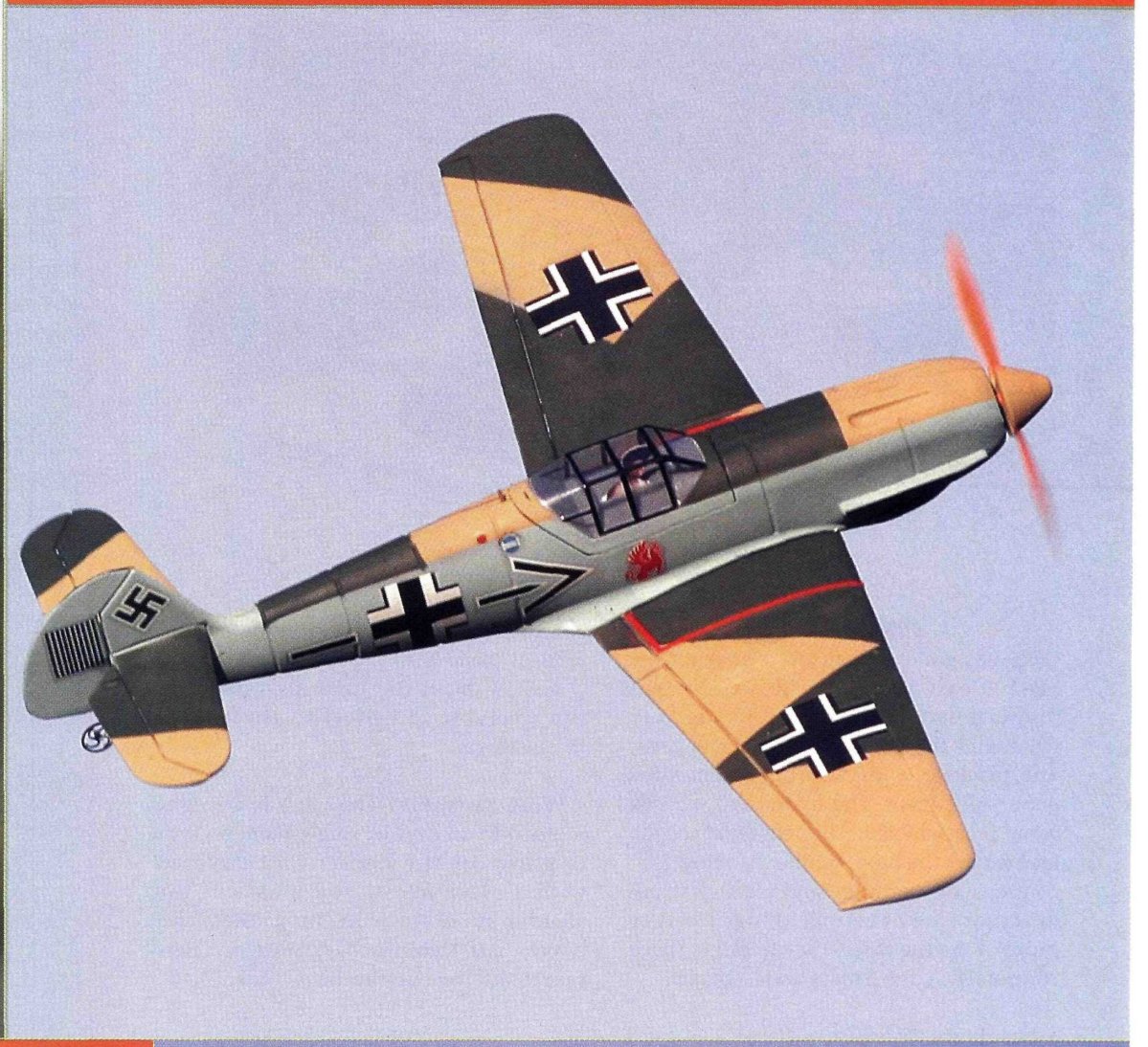
For a little extra insurance, I chose to fiberglass the wing-center joint. I carefully removed the Ultracote (making sure not to score the sheeting) so that the resin could bond properly to the wood.

GWS

Me-109 ARF

Fearsome foamie fighter

by Norm Bogenschild



Do you want to fly like a WW II German ace without the hassle of building a complicated scale model? The Me-109 ARF from GWS can have you re-fighting the famous air battles of WW II at your local park in no time. The kit is up to GWS's usual high standards, with lots of details molded into its injected-foam fuselage. It also includes a motor system, decals and hardware. The foam is painted in primer gray, but a scale paint job like the one you see here is only a few passes of an airbrush away. Then you'll be set to take on your friends in some of GWS's other scale WW II warbirds in your own backyard battles.

PHOTOS BY JOHN REID, PETE HALL & DERON NEBLETT

SPECIFICATIONS

MODEL: Me-109 ARF

MANUFACTURER: Grand Wing Servo (GWS)

TYPE: semi-scale backyard flyer

WINGSPAN: 35.4 in.

WING AREA: 210 sq. in.

LENGTH: 29.8 in.

WEIGHT (READY TO FLY): 18 oz.

WING LOADING: 12.3 oz./sq. ft.

NO. OF CHANNELS: 4

DRIVE SYSTEM USED: GWS EPS-300C (included) with a GWS GS-100 ESC

RADIO REQ'D: 4-channel with 3 mini- or microservos

RADIO SYSTEM USED: Hitec Flash 5

BATTERIES USED: 9.6V 800mAh NiMH

FLIGHT DURATION: 5 min.

PRICE: $59.99

FEATURES: polystyrene-foam construction throughout; preassembled motor and gearbox, prebent landing gear, precut decals and all hardware included.

COMMENTS: the Me-109 is an easy-to-assemble foam fighter with a lot of scale detail for a backyard electric. Its energetic performance is well suited to the advanced pilot and would be a fun challenge for an intermediate pilot.

HITS

- Scale appearance.
- Easy to build and repair.
- Aerobatic capability.

MISSES

- Landing-gear mount is fragile.
- Tendency to tip-stall.

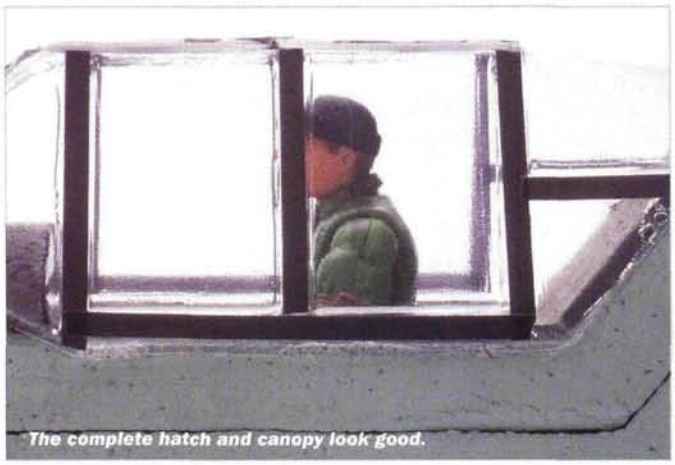
CONSTRUCTION

GWS has done a great job of making the Me-109 easy to build. The step-by-step photo-illustrated instructions are very good, and the kit has relatively few parts. The fuselage, wing and tail are molded polystyrene foam. The motor and gearbox come preassembled. The remainder of the kit includes the prop, spinner, landing gear, control rods, hardware and a set of sharp-looking decals. The four things I had to supply were the radio, the electronic speed control (ESC), the battery and a charger.

• **Fuselage.** The fuselage is molded in halves. I started the assembly according to the instructions by installing the control rods in each half of the fuselage. If you don't plan to paint your model, be careful not to scrape the stock paint off during assembly. I glued the fuselage halves together with 6-minute epoxy and held them together with rubber bands instead of the recommended tape. The motor and gearbox are mounted to the fuselage on a hardwood block that is epoxied into a cavity in the foam. The Me-109 has a hatch on the top that sits in the cockpit that allows easy battery changes without having to remove the wing. The canopy is attached to the removable hatch and held in place with a post and a magnet.

Last, I glued the mounting plate for the steerable tailwheel to the rear of the fuselage.

• **Wing assembly.** The wing is a single, molded-foam unit. A single bamboo spar is glued in the center and covered with a black decal. You must cut the ailerons out of the wing, hinge them and bevel their leading edges. I used a new razorblade to cut the bevel. Install the torque rods before you hinge the ailerons to the wing. The slots for the torque rods are molded into the wing, which makes installation a snap. The hinges consist of a thin, flexible-plastic material. I cut slots in the wing and the ailerons with a hobby knife and test-fit them before I glued them with the



The complete hatch and canopy look good.

TIP Remove the landing gear for landings on grass fields.

GWS's system for mounting the landing gear on the Me-109 isn't too strong, and the plastic mounting plate is easily ripped out of the foam wing on hard landings. Since the landing gear does not look scale anyway, I recommend that you remove it and belly-land the plane on grass.

FLIGHT PERFORMANCE

The ME-109's small size and scale appearance make it a blast to fly around your local schoolyard. An area about the size of a football field provided plenty of room to put the warbird through its paces. Winds were light for the first flights, but the ME-109 flies fine in light to moderate wind. I haven't flown very many scale planes that performed this well, and flying the ME-109 was pleasantly surprising.

TAKEOFF AND LANDING

On a fully charged battery, the Me-109 has a decent climb rate. The plane climbs steadily at about a 20-degree angle but could use a little more power. This is not a plane for the beginner pilot. I recommend hand-launching the Me-109 over grass surfaces, but it takes off easily from a paved surface.

AEROBATICS

GWS definitely had the advanced pilot in mind when it designed the Me-109. The plane is quite capable of aerobatics if you keep some throttle on and manage your airspeed. On a freshly charged battery, the plane will even knife-edge and the ailerons produce a quick roll rate.

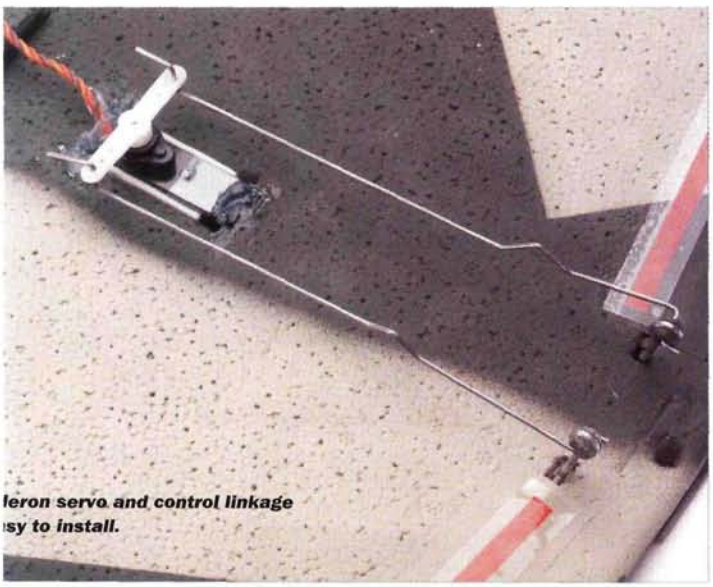
SLOW-SPEED PERFORMANCE

The Me-109 is a scale warbird, and it flies in a scale fashion. This makes it fun to watch but means it doesn't want to slow down too much. It has a tendency to tip-stall if you don't keep your airspeed up.

HIGH-SPEED PERFORMANCE

The model is much more comfortable at faster speeds; the controls are solid, and it looks great during high-speed, low-altitude strafing runs. Keep in mind that the battery is completely surrounded by foam, so try to avoid flying at full throttle all the time. This will prevent your battery from overheating. The two key words for enjoying this plane to it's fullest are: airspeed management!

supplied foam-safe cement. Cutting and hinging the ailerons was perhaps the most difficult part of the construction, and even a beginner will be able to accomplish this easily. The mounting point for the landing gear is epoxied to the bottom of the wing along with the reinforcement for the wing hold-down screw. In retrospect, I would have preferred a stronger gear-installation setup.



leron servo and control linkage ***sy to install.***

• **Stabilizers.** The horizontal stabilizer is a separate molded-foam piece, while the vertical stabilizer is molded into the fuselage. The elevator and rudder must be cut from the horizontal and vertical stabilizers and hinged in the same manner as you did the ailerons. The control horns snap in place, but the directions recommend using epoxy as well. I deviated from the instructions slightly by cutting the rudder off and sliding the fully assembled elevator and stab into place before I installed the rudder.

The power system is glued into place between the fuselage halves and is encased in front of the motor compartment. Here you see the gear-reduction prop drive.

• **Radio installation.** This was a breeze. I used GWS Naro servos for the ailerons, elevator and rudder. The servos fit neatly into the fuselage, and I secured them with double-sided tape. I used Hitec's Electron 6 receiver with my Flash 5 radio and secured it in the

SPITTING IMAGE SPITFIRE

GWS has a whole squadron full of semi-scale foamie warbirds to keep the backyard-flyer crowd dodging and diving through dogfights at the local ball field. Of particular interest to us (and perhaps a bit worrisome to Me-109 pilots) is the GWS Spitfire ARF. Adorned with the same level of detail we admire on the Me-109, the Spitfire is the perfect counterpart in recreating your own backyard Battle of Britain. At 34.5 inches, its wingspan puts it right in the same scale as the Messerschmitt, and it shares the same power system and construction materials and techniques. It also shares the same affordable price, so you should have no problem stocking both in your hangar.

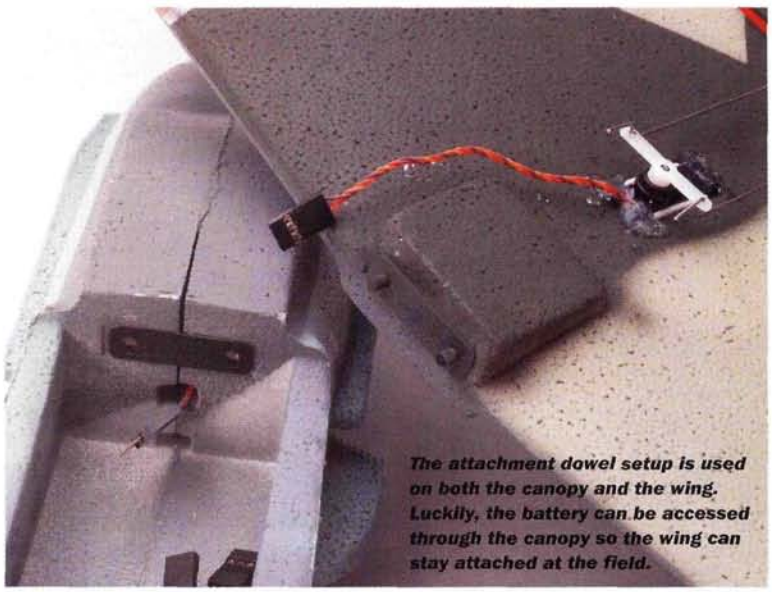
QUICK SPECS

Wingspan: 34.5 in.
Wing area: 213.9 sq. in.
Power system included: EPS 300C
Radio req'd: 4-channel with 3 servos
Price: $59.99

fuselage with some self-adhesive hook-and-loop tape. To control the motor, I used a GWS GS-100 ESC. It is rated to 5 amps continuous and has a brake incorporated. It weighs less than ¼ ounce and has performed flawlessly. The removable hatch makes slipping the 800mAh 9.6V battery into the plane very convenient, and it's nice to be able to leave the wing on when changing battery packs!

• **Final assembly.** When all the separate pieces were finished, it was time to fit them together. I glued the wing-mounting dowel pin plate to the front of the wing according to the instructions. After the glue had dried, I screwed the wing on so that I could properly align it to the tail surfaces. The last step was to secure the wire landing gear to the plastic mount with the provided screws. After the radio gear installation had been completed, I checked the balance and discovered that by moving the battery pack all the way forward, the plane balanced perfectly.

• **Finishing.** The best way to finish the Me-109 is to airbrush it with water-based acrylic paint and then apply the supplied decals. I used Tamiya paint and an airbrush I picked up at a yard sale for five bucks. I used a piece of construction paper to mask the edges for my camouflage color scheme, but a good friend figured out that Post-it Notes from 3M work perfectly for masking without removing the base color. GWS even provides documentation and decals for four famous WW II aces paint schemes.



The attachment dowel setup is used on both the canopy and the wing. Luckily, the battery can be accessed through the canopy so the wing can stay attached at the field.

CONCLUSION

GWS did its homework on the Me-109. Other than a slightly stronger landing-gear mounting system, there is little I could suggest to improve its design. The Me-109's scale looks make it fun to tear up the sky, and its pleasant flight characteristics mean you'll be fighting the Allied fighters instead of your own controls. If an easy-to-build, scale-looking, crisp-handling warbird that is right at home at the local ball field sounds like your cup of tea, check out the GWS Me-109 ARF.

GWS; gws.com.tw; distributed by Balsa Products (732) 634-6131; balsapr.com; Horizon Hobby Inc. (800) 338-4639; horizonhobby.com; and Maxx Products Intl. (847) 438-2233; maxxprod.com.

Hitec RCD Inc. (858) 748-6948; hitecrcd.com.

WattAge; distributed by Global Hobby Distributors (800) 854-8471; (714) 963-0133; globalhobby.com.

CONSTRUCTION

by Nick Ziroli Sr.

The Rudder

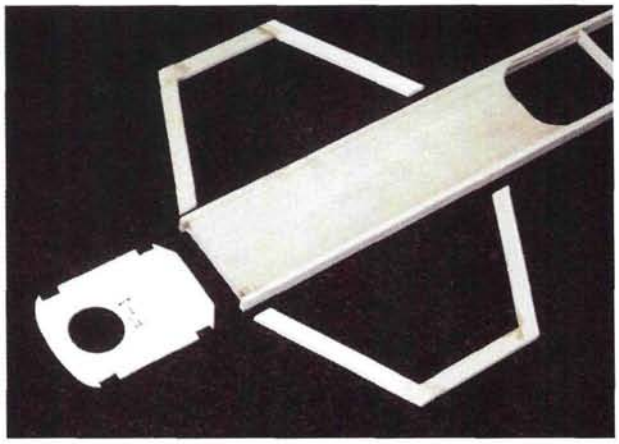
A modern, electric-powered version of the famous Good brothers' 1949 design

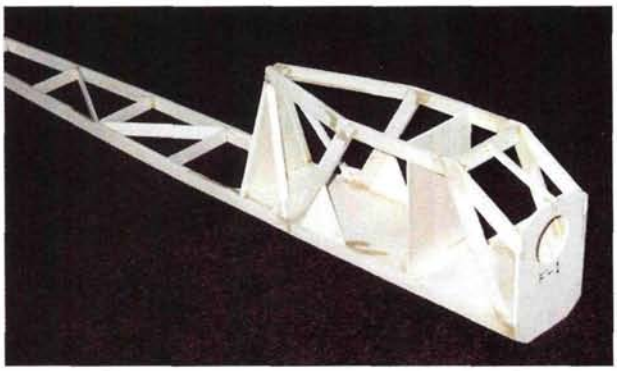
As a member of the Vintage R/C Society, I felt I should have a vintage model to fly. There are many interesting early RC models that would be good flying models if equipped with modern power sources and radio equipment. The Rudderbug was state-of-the-art for the time, and incorporated many important design features for the day. For my modern-day Rudderbug-E, I chose to use electric power, and I sized the model (54-inch span) so I could use a geared AstroFlight cobalt 05 motor. A glow engine (.09 to .25) can also be used. I like electric power because of the ease of operation, the lack of mess and the ability to fly anywhere, within reason, without the fear of noise complaints.

Nick poses with his new Rudderbug-E. To preserve that vintage look, Nick used silk and dope to finish his model.

bug-E

PHOTOS BY NICK ZIROLI SR. & GERRY YARNISH





Top: begin fuselage construction with the crutch and the floor piece. The floor is flush with the top of the crutch framework. Above: the F-1 firewall and the doorframes form the cabin's structure. Here, the windshield frames and crosspieces have been installed, but the temporary TF-1 in the center of the cabin area has not yet been removed.

Construction is prototypical of the early Rudderbug, but I reduced the dihedral angle just a bit. Although its design is a little unconventional, the fuselage is easy to build and forms a light and strong structure. A side door makes battery access easy; there was a door on each side on the original Rudderbug, but I didn't feel that was necessary today. Fifty years ago, the doors provided access to a receiver that needed constant tuning and relay adjusting. If desired, two doors can be installed.

FUSELAGE CONSTRUCTION

Begin construction with the fuselage. Match the wood to the parts you will be building; use harder wood around the cabin area and for the wing spars and use medium-hard wood for the rest of the airframe. Build the 3/16x1/2-inch balsa crutch over the plan. The crosspieces under the 1/8-inch balsa floor are 3/32x3/8 inch and 3/32x1/2 inch aft of the floor. Be sure to include the floor as part of the crutch. The crutch extends 1/8 inch forward of the first crosspiece at the firewall F-1.

Assemble two identical doorframes over the plan, and glue F-1 to the front of the crutch. Use a square to make sure that F-1 is square to the crutch, and tack-glue temporary former TF-1 to the floor, as shown on the plan. Make sure that it is centered on the floor. Glue the doorframes into place and use TF-1 to keep them square. Leave TF-1 in place until the fuselage has been completed. Add the 3/32-inch balsa bracing gussets FG-1, 2 and 3 so they are flush with the outside. Cut the windshield frames and crosspieces to shape and then glue them into place; add the 3/16-inch-square windshield center post.

Assemble the rear cabin top and former F-4 over the plan. These parts must be cut and angled accurately. Pin F-4 and the cabin top in place; if required, adjust the height of F-4 so the top is straight and the wing sits flat on it. Cut and fit the final diagonal braces from the bottom of the doorframe to the top of F-4. Glue former F-9 to the front face of the rear crosspiece. With the crutch on a flat surface, glue the top fuselage stringer into place; use straight, medium-hard strip balsa for the stringers. Add the remaining top formers F-5 through F-8. For an authentic scale look, the covering should not touch these, so make sure that they are 1/16 inch in from the edges of the crutch and top stringer.

Bend the 1/8-inch-diameter music-wire landing gear to shape. Use J-bolts or metal straps to attach the landing gear to the 1/8-inch-ply F-3B. Glue all the bottom formers into place and add the bottom stringers.

SPECIFICATIONS

MODEL: Rudderbug-E

TYPE: vintage electric RC sport model

WINGSPAN: 54 in.

LENGTH: 39 in.

WING AREA: 480 sq. in.

WEIGHT: 48 oz.

WING LOADING: 14.5 oz./sq. ft.

MOTOR USED: AstroFlight geared cobalt 05 with Jeti 350 ESC

RADIO REQ'D: 3-channel (throttle, rudder and elevator) with two miniservos

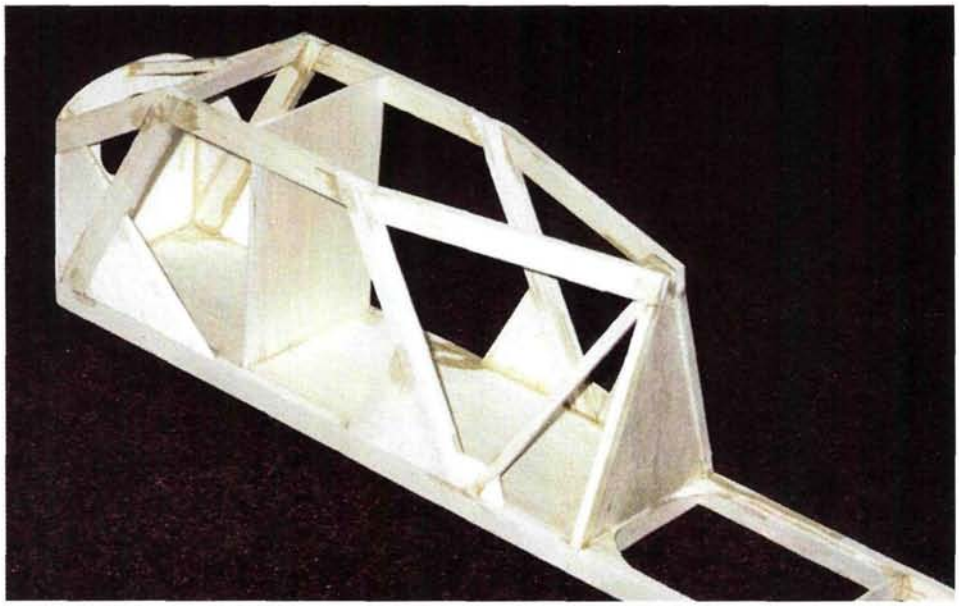
RADIO USED: Airtronics RD6000 transmitter, Airtronics 92745/72 FM receiver with two Airtronics 94556 Microlite servos

BATTERY USED: 7-cell, 1400mAh Ni-Cd

COMMENTS: designed by Nick Ziroli Sr., the Rudderbug-E is a modern, electric-powered RC version of the original 1949 Good brothers design. It uses traditional balsa and plywood construction techniques. The fuselage incorporates a central crutch so the model can be built on a flat surface. A side door provides access to the radio gear and drive battery.

Notch the stringers at F-3B to fit the bottom sheeting. Bevel the edges of the bottom sidepieces that fit against the crutch and glue them into place. Cut holes in the side to clear the landing-gear legs. Don't worry if you make a hole too large because it will be covered with a 1/32-inch-ply reinforcement disc. Sand the fuselage's bottom edges flat but don't alter the side profile.

Sheet the bottom with 3/32-inch balsa; make sure that the grain runs crosswise.

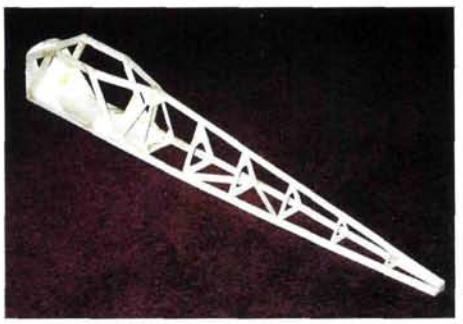


You can adjust the height of the triangular F-4 former to ensure that the cabin top remains straight. Note the placement of the reinforcing gussets.

The Rudderbug was originally designed to fly with rudder-only control, and it wasn't proportional rudder, either. It was a sequential control through a wound rubber-band-powered actuator and escapement. Operating a pushbutton on the transmitter gave right and left control. No command was neutral. If a right turn was commanded, the next command had to be left. Making two right turns in a row required a quick left to get back to right. This was much easier than it sounds; I spent many hours flying with such a system, and I crashed a lot, too. The reason I point this out is to make you aware that these early RC models were really free-flight models that could be trimmed during flight. They had to be stable and able to fly without any control inputs.

My modern version, even with its reduced wing dihedral, is very stable and easy to fly. Of course, the additions of elevator and throttle control are a big help. The geared cobalt 05 motor on a 7-cell battery pack provides adequate power. The Rudderbug-E will easily take off from a grass runway.

Aerobatics are limited to basic maneuvers; loops, barrel rolls, wingovers and stall turns can all be performed. Anyone who was active in early RC might enjoy this vintage sport model, and I hope many others may find the nostalgia value worth the effort to build their own Rudderbug-E.



The fuselage structure awaits the addition of the bottom formers and stringers.

Sand all the edges round as shown on the plans. Add the plywood discs over the landing gear legs. The covering should not touch the bottom formers except for F-8; it is built with 1/8x3/8-inch-balsa and sanded flush with the stringers and crutch. Drill the 3/16-inch holes and install the wing-mount dowels and braces. You can build the door over the plans or within the door frames. Use two CA hinges to hinge it at the bottom edge. The door is held closed at the top with a plywood or plastic latch.

Cut the nose blocks NB-1 and NB-2 from 3/8-inch balsa. Glue NB-2 on NB-1 and add the hardwood motor mounts. Be sure to place the motor mounts at the correct height for your motor. Before you glue them on F-1, be sure that the motor mounts have the correct downthrust angle. Add the attachment blocks and the plywood plate for the nosewheel and install the nosewheel assembly. The steering pushrod runs through a plastic guide tube along the right side of the fuselage to the servo.

TAIL SURFACES

Assemble the fin by pinning the 1/4-inch leading and trailing edges over the plans. Block them up 1/8 inch at the bottom and 1/16 inch at the top for the taper of the ribs. Glue the ribs into place and then remove the fin from the board and add the tip. Sand to shape.

The stabilizer is a simple structure that is built over the plans. Pin down the 1/8x1/4-inch spar and the 1/4-inch square leading and trailing edges. Add the ribs and the 1/16-inch center-section sheeting. Remove the stabilizer from the plans and glue the rib bottoms and 1/16-inch bottom sheeting into place. Sand the leading edge to shape; I block-sanded the tops and bottoms of the ribs to taper the surfaces to about 3/8 inch at the tip. Add the tips and sand them to shape. Cut the elevator halves and rudder from 3/16-inch sheet balsa and taper them to 1/16 inch at their trailing edges. Join the elevator halves with a 3/16-inch-diameter dowel as shown. Cut the hinge slots and fit the hinges but don't glue them into place yet.

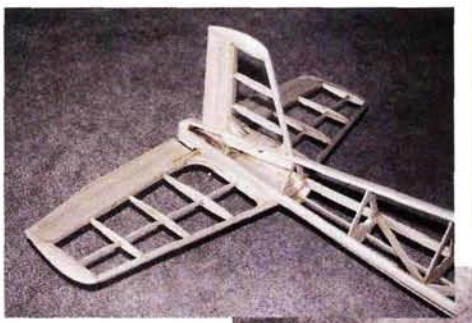
WING CONSTRUCTION

Start the wing construction by gluing the 1/16x1 1/2-inch trailing-edge tip pieces together. Cut off the tapered tip and glue it to the front edge. I stacked six pieces of balsa to cut the W-3 ribs for each wing and drilled the stack of ribs to accept the rear spar. Drill a 9/32-inch-diameter hole where the 1/4-inch-square spar passes through the ribs. Separate the ribs and run a 1/4-inch-square file through the hole to fit the spar.

Build the two main wing panels separately and then join them to the flat center section. Pin the main spar to the plans. To build a straight wing, this spar must be straight. If necessary, cut the spar from a piece of 1/4x1-inch hard balsa. Use a straightedge and draw straight lines 3/4 inch apart and cut apart the pieces with a hobby knife or a band saw. This is more work, but the resulting straight spar is worth it.

...the original Rudderbug was one of the most influential of the early RC model designs.

Cut out and pin down the 1/16-inch bottom sheeting between W-1 and W-2. Pin down the trailing-edge bottom sheeting and glue all the ribs into place. Place shims under the trailing edge to bring it up to ribs W-4, 5 and 6. This provides washout at the tips. W-1 is glued at an angle against the DA-1s. Make sure that there is a 1/16-inch space in front and in back of the spar at W-1 for the wing join-

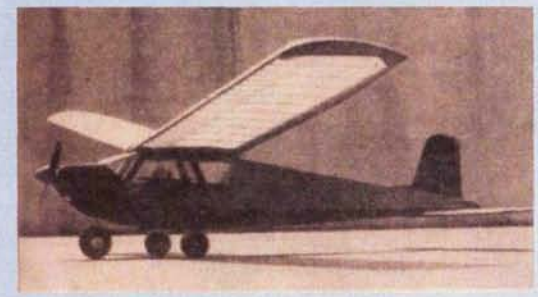


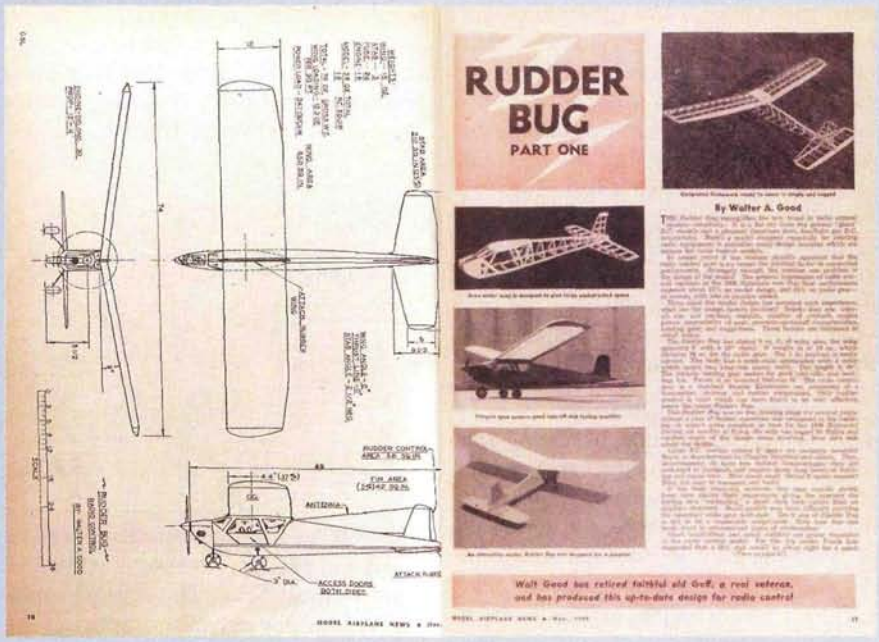
Above: the tail surfaces are strong and light. The rudder and elevator halves are made out of balsa sheet sanded to a tapered shape. Right: the competed fuselage with the nose blocks and sheeting installed and sanded to shape. Notice the servo installation at the aft-cabin area.

A 'BUG'S LIFE

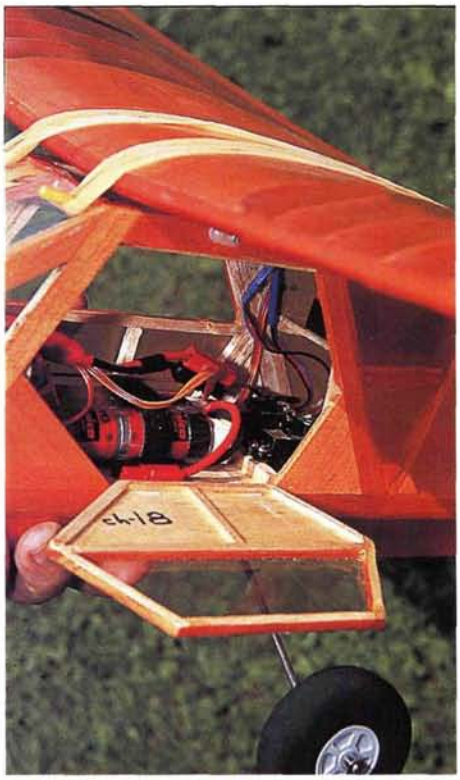
Created by radio control pioneers Walt and Bill Good, the original Rudderbug was one of the most influential of the early RC model designs. The Good brothers had gained fame earlier with their AMA Nationals-winning Big Guff, and they followed that with a 1949 Nationals win with the Rudderbug. As with most other designs of the time, the Rudderbug had rudder-only control.

A construction article for the Rudderbug (at that time, it was recognized as the cutting edge of technology) was published in the May and June 1949 issues of *Model Airplane News*. In 1954, Berkley Models produced a kit based on the design called the Royal Rudder-Bug. The Goods' original model had a 72-inch wingspan, and the Berkley version was reduced to a 62-inch span. I built the Berkley model back in 1955, and as I recall, it was a nice kit.





The Good brothers with their Big Guff.



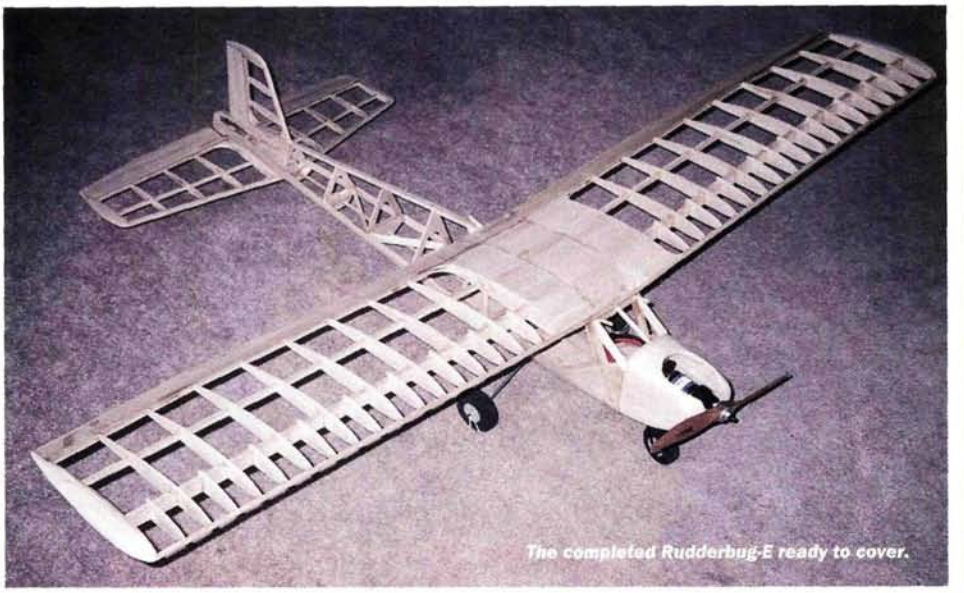
Access to the radio gear is through the big side door. Everything is easy to get to.

ers WJ-1. Add the leading edge and false ribs W-1A and W-2A. Glue the top trailing edge sheeting into place. Insert the ¼-inch-square rear spar through the holes and glue it to each rib. Don't add the top sheeting balsa until the panels have been joined to the wing center section. Remove the wing panels from the board and add the wingtips. The tips can be made from balsa blocks or from ⅛-inch sheet cut to the outline shape. The original Rudderbug had sheet-balsa tips on all surfaces.

Build the center section over the plan on top of the 1/16-inch bottom sheeting. Make sure that the balsa is cut to the width shown on the plans. Include the dihedral joiners and three W-1 ribs. Attach the outer wing panels to the center-section assembly. Cut slots at the trailing edges of the ribs for the rear joiner WJ-2. Block up the outer panels 1 inch at the last W-3 rib. It is best to use a 10x1-inch block so the bottom of the rib is the same distance off the board. After the wing panels have been joined, attach the top 1/16-inch balsa sheeting to complete the wing structure. Sand everything smooth.

COVERING AND FINAL ASSEMBLY

Most builders will choose a plastic film for covering, but I decided to use silk and dope. It's the way I did it on my Royal Rudder-Bug nearly 50 years ago. This was the first silk covering job I had done in about 30 years, and it was an enjoyable exercise that was like a time warp for me.



The completed Rudderbug-E ready to cover.

Close-up view of the cabin area and nose. Notice that the wing structure is built in three sections and joined with the dihedral bracing. After the three wing panels are joined, the top center sheeting is added.

The wonderful smell of nitrate dope brought back the covering techniques that I haven't used for so many years. I even cut my AMA numbers from black tissue and applied them to the model with clear dope just like we used to do. All this is pretty much a lost art today.

After the model has been covered, hinge the control surfaces and install the servos, pushrods and control horns. Set up control throws as shown on the plan. For control, I used an Airtronics RD6000 transmitter, 92745/72 FM receiver and two Airtronics 94556 servos. I used double-sided foam tape to attach the receiver to the platform at the rear of the cabin. The AstroFlight geared cobalt 05 motor is powered by a 7-cell, 1400mAh Ni-Cd battery pack and a Jeti 350 speed control. A Master Airscrew 11x7 electric prop provides the best performance. Flight time with this setup is four to five minutes

Before you fly the model, adjust the battery location so the model balances as shown on the plans. Flight performance was pretty much as I had anticipated: the Rudderbug-E flies like a trainer. In fact, it would be a good training plane. Whether you use glow or electric power to power the model, I know you will have fun with your new Rudderbug-E. Enjoy!

Airtronics *(714) 978-1895; airtronics.net.*

AstroFlight Inc. *(310) 821-6242; astroflight.com.*

Jeti; *distributed by Hobby Lobby Intl. (615) 373-1444; hobby-lobby.com.*

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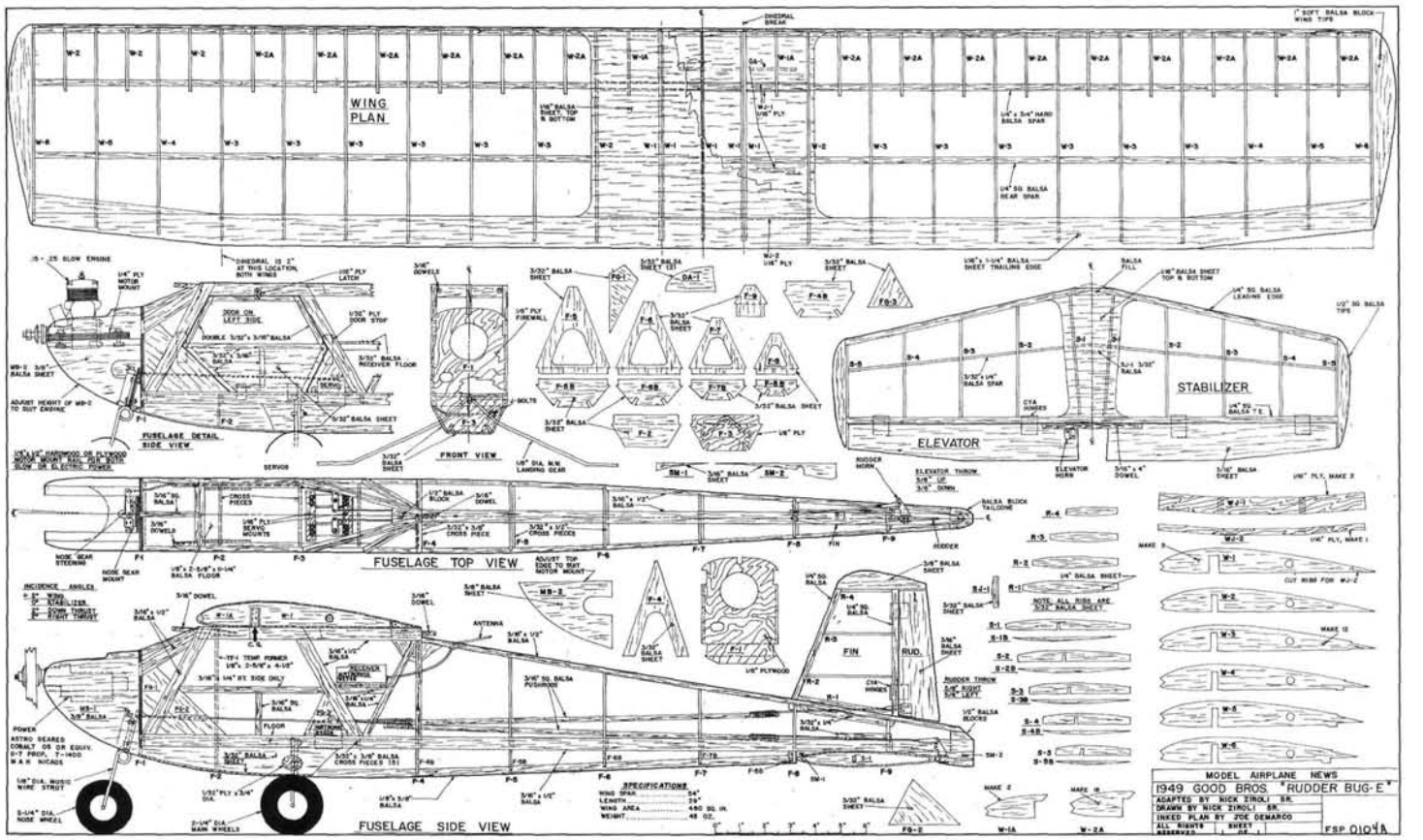
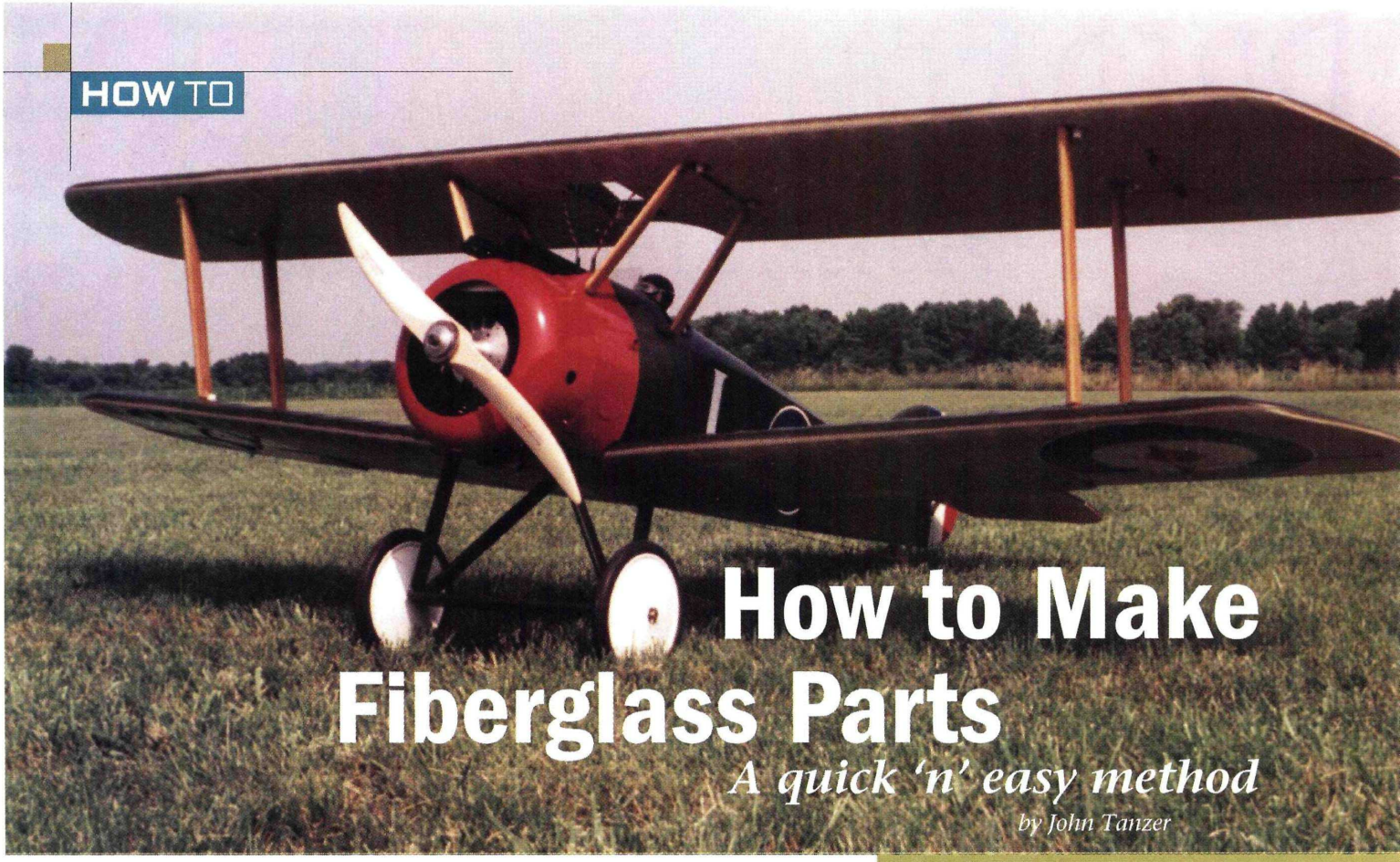
RUDDERBUG-E
FSP0104A

Designed by Nick Ziroli Sr., the Rudderbug-E is a modern, electric-powered RC version of the original 1949 Good Brothers design. It uses traditional balsa and plywood construction techniques. The fuselage incorporates a central crutch so the model can be built on a flat surface. A side door provides access to the radio gear and drive battery.

WS: 54 in.; L: 39 in.; power: AstroFlight geared 05 motor; 3 channels; 1 sheet; LD 2. **$19.95**



To order the full-size plan, turn to page 154, or visit rcstore.com online.

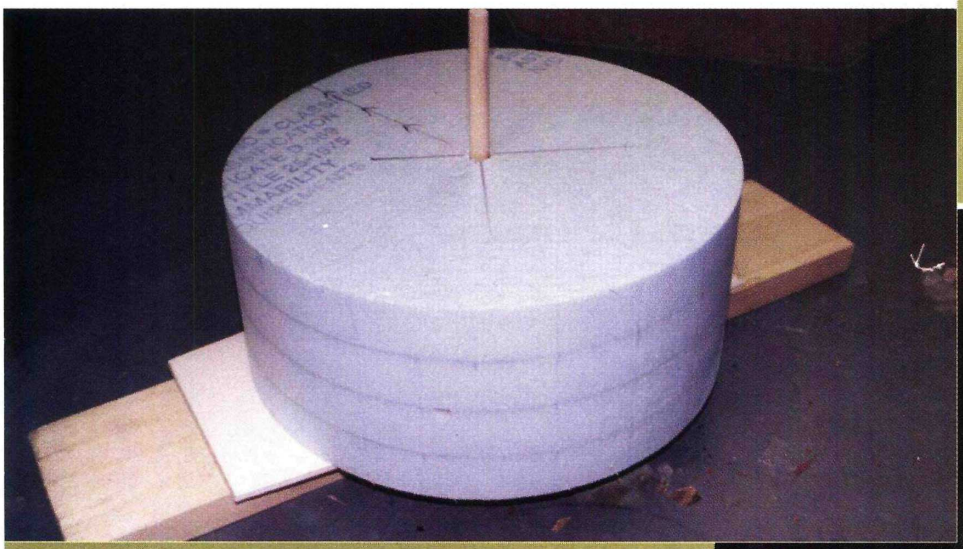


How to Make Fiberglass Parts

A quick 'n' easy method

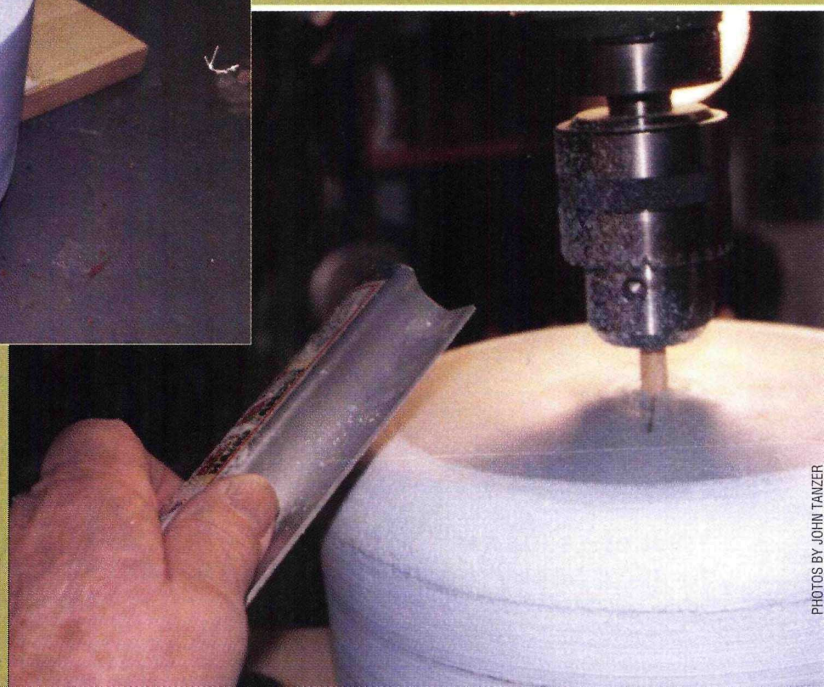
by John Tanzer

When you can't find a part for the plane you're building, it really isn't difficult to make one yourself. For about 25 years, I have been making my own fiberglass cowls, wheel pants, engine nacelles and other parts. To make the Sopwith Camel cowl depicted in these photos, I used 1-inch-thick blue foam, a ½-inch-diameter dowel, plastic wrap, 3M Super 77 spray adhesive, a heat gun, 6-ounce fiberglass cloth, pantyhose and Z-Poxy finishing resin. I also used my band saw and a drill press.

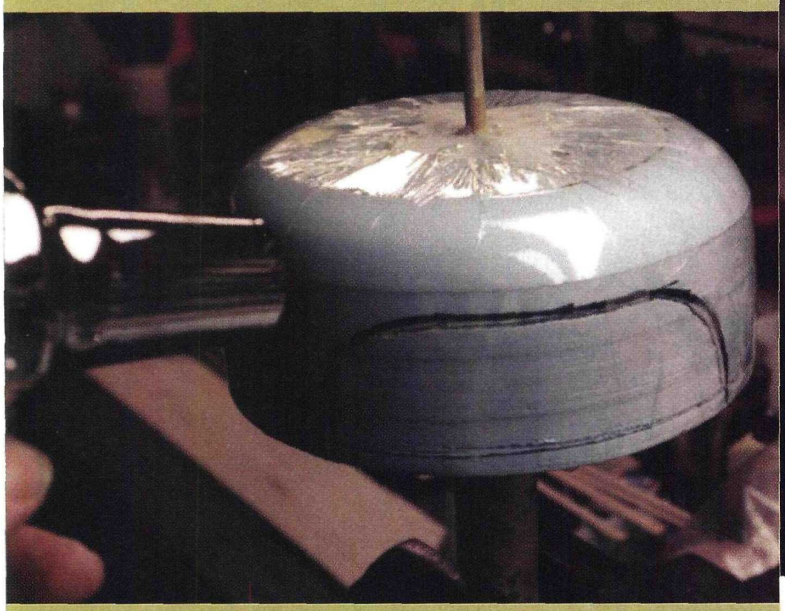


1 I cut four, 12x12-inch-square pieces of blue foam and glued them together with 3M Super 77; the spray adhesive doesn't interfere with cutting and sanding the foam plug. I used a drill press to drill a ½-inch-wide hole in the center of the foam block, and then glued the dowel into the foam leaving ¾ inch sticking out from the bottom and 3 inches sticking out from the top. The dowel at the top of the foam will act as a spindle, and it must be plumb.

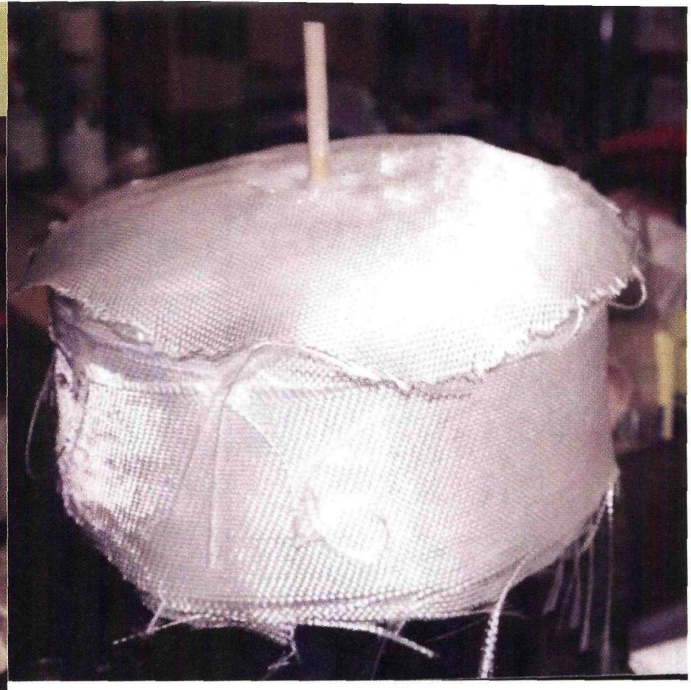
2 I drilled a ½-inch hole in a 1x4-inch pine board to accept the dowel so that I could mount the assembly on the board and turn it while cutting it on the band saw; this made a perfect circle. I clamped the board with the attached cowl plug to the drill-press table and, with the drill press at low speed, I spun the foam plug and sanded it to shape. Coarse sandpaper works best for the first rough-cut. Be sure to use a template to check the plug for the proper shape!



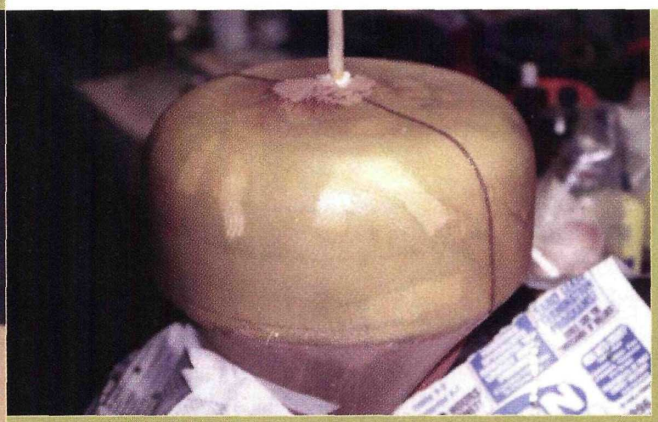
PHOTOS BY JOHN TANZER



3 When I was satisfied with the plug, I mounted the assembly in a vise and covered it with plastic wrap that I secured in place with clear tape. I then used a heat gun to shrink the wrap (be careful not to melt holes in the wrap!). You want a fairly smooth surface; the plastic wrap is only there to help the mold release the fiberglass part.



4 I cut a piece of 6-ounce fiberglass cloth into strips, wrapped them around the plug and secured them with clear tape. I also added circular glass-cloth pieces to the top of the plug; you need about three layers of fiberglass.



5 I pulled the pantyhose down over the plug to keep the glass cloth close to it and taped the pantyhose to the dowel at the top of the plug. Be sure to pull the hose down really hard to remove any wrinkles; if necessary, reach under the hose to smooth out the glass cloth. Tape or tie off the pantyhose at the bottom to keep it tight. I then coated the plug with Z-Poxy; it wets the glass cloth very well and sets up nice and hard, and it's also easy to sand.

6 After the Z-Poxy has cured, trim, cut and sand the cowl while it's on the plug. The layer of plastic wrap should allow you to remove the cowl from the plug without too much difficulty. You can prime and spot-putty the pantyhose surface before you paint it, or you can add a layer of ¾-ounce fiberglass cloth to the surface to seal in the pantyhose; both ways provide a nice finish. Give this method a try; I think you will be pleased.

Here's the finished cowl after it has been removed from the plug. After you make any necessary holes, you can prime and paint it.

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▲ Congratulations to Don Danielson of Walla Walla, WA. He takes home the top prize this time around for correctly identifying November's mystery plane as a Potez 39, an all-metal, parasol-wing monoplane with tandem, open cockpits. First flown in January 1930, the Potez 39 was a French reconnaissance and bombardment plane powered by a 580hp Hispano-Suiza engine. Its armament included one forward-firing machine gun and two rear-mounted Lewis guns. The Armée de l'Air initially ordered 100 aircraft, but production eventually totaled 244. A number of the 52½-foot-wingspan Potez 39s were still in service for France in 1939. ✈

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BEST-SELLING PLANS

FSP0201A
OV-10 Bronco
Designed by Rich Uravitch, this giant-scale, twin-engine, flap- and retract-equipped warbird is economical to build (conventional balsa and ply) and definitely fun to fly. There are many viable and colorful paint-scheme options for this impressive model, and Rich offers formed-plastic parts for it (prices and ordering details are printed on the plan). WS: 81 in.; L: 79.5 in.; power: 2, .46 to .60 engines; 4 to 6 channels; 3 sheets; LD 3. **$21.95**

FSP1100A
Aeronca Champ
Slow Flyer
A semi-scale electric slow flyer, Nick Ziroli's Aeronca Champ has much nostalgic appeal. Using stick-and-tissue construction, the Champ has 4-channel control and excellent performance. It can be built with or without ailerons. A formed-plastic engine cowl and windshield are available from Nick; ordering information appears on the plan sheet. WS: 35 in.; L: 21 in.; power: 280 geared electric; 4 channels; 1 sheet; LD 2. **$14.95**

FSP09991
Arado 76
Designed by Stan Rutz, this strong, sport-scale model of an overlooked WW II-era aircraft is candy for the eyes and offers easy-to-fly realism. Building time is cut by extensive use of sheet balsa to exploit the no-pin advantage of CA and use Sig replacement parts. WS: 50 in.; L: 37.5 in.; power: 4-stroke .20 or .26; 4 channels; 1 sheet; LD 2. **$19.95**

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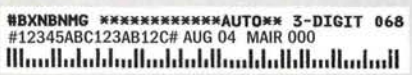

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BY MOLLY O'BYRNE

FINAL **APPROACH**

PHOTOS BY JAIME JOHNSTON

Build your own full-size model!

Over the years, we have seen the introduction of ¼-, ⅓- and even 40-percent-scale models of the world's most famous airplanes. Now, in an unprecedented development, the Arizona Model Aircrafters division of Prototype Production & Engineering (PPE) has embarked on a new phase of modeling: the creation of full-scale plans and the ability to construct full-size—and in some cases, operational—replicas of any aircraft that has ever existed.

Top: a full-size Curtiss JN4 Jenny under construction at PPE. Above: a B-24 Liberator enlarged 900 percent from Don Smith Plans; it's part of an exhibit on barnstorming at the Virginia Air & Space Center. Below left: a 75-percent-enlarged, 30-foot-span 1903 Wright Flyer that's on display at Hill AFB in Utah. Below right: the front end of the Curtiss Jenny during construction.

How did this change of direction come about for the well-known Scottsdale, AZ-based manufacturer of more—shall we say "normal"-size—models? About two years ago, an aviation-themed restaurant chain contacted Arizona Model's Jaime Johnston to inquire whether it would be possible to provide them with a replica Spad 13 for display outside the eatery's entrance. Delivered unpainted and fabric-covered, the Spad—large enough for an adult to sit in—was such a hit with its new owners that they asked Johnston to paint and detail it, and then they ordered a full-size Fokker D-VII from him, too! PPE fulfilled that request using plans (enlarged 400 percent!) that had been published in the March 1999 issue of *Model Airplane News*, and a new phase of the company's business was launched.

Using PPE's state-of-the-art manufacturing processes, aircraft designs can be scaled to any size, production times are drastically reduced, and tooling costs are practically eliminated. Explains Johnston, "Documentation is scanned directly into a computer. Full-size blueprints are no problem because of the wide-format optical scanner." Production is centered in the company's Chino, AZ, plant; the laser-cut parts are then shipped to Derby, England, for assembly by a workforce comprised mainly of former Rolls-Royce employees.

Another contract took Johnston to Hampton, VA, where the Virginia Air & Space Center took possession of a PPE-built B-24 Liberator, a Curtiss Jenny and a 1903 Wright Flyer. A full-size replica of the Spirit of St. Louis resides in Johnston's backyard; its parts were laser cut and assembled from digitized, 400-percent-enlarged plans designed by Nick Ziroli. This model was recently purchased by the Venezuelan Air Force—a good thing, admits Johnston, because "My wife wants her garden back!" Full-size kits of operational 1903 Wright Flyers have been sold to the Venezuelan and Irish Air Forces, and customers for other replicas include *National Geographic* magazine, NASA and various universities. PPE is also the official replica maker for the First Flight Centennial Foundation.

These unique reproductions are truly works of art that represent craftsmanship at its best. As the 101st year of manned flight begins, it seems appropriate that model airplane making has also reached a new level of size and sophistication. ✈